

=> FILE WPIX

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=> D QUE L52

L2 1 SEA FILE=WPIX ABB=ON US2001-6166/PRN  
L3 164589 SEA FILE=HCAPLUS ABB=ON LIQ?(2A)CRYST?  
L4 58947 SEA FILE=HCAPLUS ABB=ON L3(6A)DISPLAY?  
L33 27997 SEA FILE=WPIX ABB=ON L4 AND LAYER?  
L34 3620 SEA FILE=WPIX ABB=ON INTERFERENCE(3A)(MAX? OR MIN?)  
L35 160991 SEA FILE=WPIX ABB=ON (WAVE? OR LIGHT?)(3A)(REFLECT? OR  
TRANSMIT?)  
L36 13135 SEA FILE=WPIX ABB=ON (MAX? OR MIN?)(3A)(REFLECT? OR TRANSMI?)  
L37 1164 SEA FILE=WPIX ABB=ON (MIN? OR MAX?)(5A)DIFFRACT?  
L38 3296 SEA FILE=WPIX ABB=ON L33 AND ((L34 OR L35 OR L36 OR L37))  
L39 2664 SEA FILE=WPIX ABB=ON L38 AND G02F?/IC  
L40 63 SEA FILE=WPIX ABB=ON L39 AND INTERFERENCE  
L41 2 SEA FILE=WPIX ABB=ON L40 AND (FRONT AND (REAR OR BACK))  
L42 1 SEA FILE=WPIX ABB=ON L2 AND L40  
L43 20 SEA FILE=WPIX ABB=ON L40 AND POLARI?  
L44 14 SEA FILE=WPIX ABB=ON L40 AND (RI OR REFRACT?)  
L46 74146 SEA FILE=WPIX ABB=ON LCD  
L47 16440 SEA FILE=WPIX ABB=ON L46 AND LAYER?  
L48 1757 SEA FILE=WPIX ABB=ON L47 AND ((L34 OR L35 OR L36 OR L37 OR  
L38))  
L49 60 SEA FILE=WPIX ABB=ON L48 AND INTERFERENCE  
L50 22 SEA FILE=WPIX ABB=ON L49 AND (POLARI? OR RI OR REFRACT?)  
L51 16 SEA FILE=WPIX ABB=ON L50 AND G02F?/IC  
L52 35 SEA FILE=WPIX ABB=ON (L41 OR L42 OR L43 OR L44) OR L51

=> D L52 FULL 1-35

L52 ANSWER 1 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2005-510998 [52] WPIX  
DNN N2005-416853  
TI Nuclear hardened active matrix **liquid crystal display** in information **display** system, has protective laminate stack that comprises volume absorbing filter for absorbing infrared portion of electromagnetic spectrum.  
DC P81 U13 U14  
IN LU, K; SACCOMANNO, R J  
PA (LUKK-I) LU K; (SACC-I) SACCOMANNO R J  
CYC 1  
PI US 2005140833 A1 20050630 (200552)\* 13 G02F001-1335 <--  
ADT US 2005140833 A1 Provisional US 2003-531059P 20031219, US 2004-13697 20041217  
PRAI US 2003-531059P 20031219; US 2004-13697 20041217  
IC ICM G02F001-1335  
ICS G02F001-1333  
AB US2005140833 A UPAB: 20050815  
NOVELTY - A protective laminate stack (71) is positioned in front of the **liquid crystal display (LCD)** glass laminate stack (11) and is thermally separated from the **LCD** glass laminate stack through an air gap (6). The protective laminate stack has a volume absorbing filter (4) that absorbs energy in infrared portion of the electromagnetic spectrum.  
DETAILED DESCRIPTION - The protective laminate stack (71) positioned in front of the **LCD** glass laminate stack (11) **transmits** portion of **light** energy corresponding to red color band, green color band and blue color band. The protective laminate stack has a **polarizing** filter, a grounded conductive **layer** and an anti-reflective **layer**. A shielding plate (5) is attached on the volume absorbing filter. An INDEPENDENT CLAIM is also included for a method for hardening an active matrix **liquid crystal display**.  
USE - Nuclear hardened active matrix **liquid crystal display (AM-LCD)** used in information **display** system. The protective laminate stack can be attached to projection display.  
ADVANTAGE - The protective laminate stack removes the thermal flash energy and slowly dissipates its heat over time, thereby improving display quality of the **LCD**.  
DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of the nuclear hardened active matrix **LCD**.  
volume absorbing filter 4  
shielding plate 5  
air gap 6  
LCD glass laminate stack 11  
protective laminate stack 71  
backlight compartment 72  
separate electromagnetic **interference (EMI)** shielded enclosure 73  
Dwg. 7/12  
FS EPI GMPI  
FA AB; GI  
MC EPI: U13-D08; U14-K01A1C; U14-K01A2  
L52 ANSWER 2 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2005-460739 [47] WPIX  
CR 2005-460734 [47]  
DNN N2005-374379  
TI LCD assembly in projection system, has polymeric photoaligned **layer** in **polarization** compensating element, whose

in-phase fast axis orientation is azimuthally aligned at predetermined angle relative to in-plane slow axis of LCD panel.

DC P81 U14 W04  
 IN DUELLI, M; HENDRIX, K D; MAYER, T; SHEMA, D M; TAN, K L; ZIEBA, J  
 PA (JDSU-N) JDS UNIPHASE CORP  
 CYC 37  
 PI EP 1542065 A1 20050615 (200547)\* EN 39 G02F001-13363 <--  
 R: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI  
 LT LU LV MC MK NL PL PT RO SE SI SK TR YU  
 US 2005128380 A1 20050616 (200547) G02F001-1335 <--  
 ADT EP 1542065 A1 EP 2004-29309 20041210; US 2005128380 A1 Provisional US  
 2003-529315P 20031211, Provisional US 2004-587924P 20040714, Provisional  
 US 2004-589167P 20040719, US 2004-6379 20041207  
 PRAI US 2004-589167P 20040719; US 2003-529315P 20031211;  
 US 2004-587924P 20040714; US 2004-6379 20041207  
 IC ICM G02F001-1335; G02F001-13363  
 ICS G02B005-30  
 AB EP 1542065 A UPAB: 20050902  
 NOVELTY - A **polarization** compensating element for compensating the residual birefringence in LCD panel (15), has a polymeric photoaligned (LPP) **layer** (1) and a cured photopolymerizable liquid crystal polymer (LCP) **layer** (2). The in-plane fast axis orientation of LCP **layer** is azimuthally aligned at angle about 0-90 deg. relative to in-plane slow axis of the LCD panel.  
 DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for method for manufacturing **liquid crystal display** assembly.  
 USE - **Liquid crystal display** (LCD) assembly in liquid crystal on-silicon (LCoS) micro-**display** based projection system.  
 ADVANTAGE - Amount of reflection, **polarization** conversion and **interference** effects are **minimized** and spatial retardance ripples are reduced, by using simple structured **polarization** compensating element.  
 DESCRIPTION OF DRAWING(S) - The figure shows a cross-sectional view of the LPP/LCP trim retarder.  
 LPP **layer** 1  
 LCP **layer** 2  
 transparent substrate 5  
**liquid crystal display** (LCD)  
 panel 15  
 adhesive **layer** 22  
 Dwg.23/24  
 FS EPI GMPI  
 FA AB; GI  
 MC EPI: U14-K01A1C; U14-K01A1J; W04-Q01

L52 ANSWER 3 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 2005-376927 [39] WPIX  
 DNN N2005-304805 DNC C2005-117472  
 TI Optical sheet for back light unit of **liquid crystal display**, contains organic compound capable of emitting phosphor by absorbing ultraviolet ray and encapsulated with resin incompatible with resin binder.  
 DC A89 E12 L03 P81 Q71 U14 X26  
 PA (DNIN) DAINIPPON INK & CHEM INC  
 CYC 1  
 PI JP 2005128140 A 20050519 (200539)\* 10 G02F001-13357 <--  
 ADT JP 2005128140 A JP 2003-361830 20031022  
 PRAI JP 2003-361830 20031022

IC ICM G02F001-13357

ICS F21V008-00

AB JP2005128140 A UPAB: 20050621

NOVELTY - An optical sheet contains an organic compound capable of emitting a phosphor by absorbing an ultraviolet ray. The organic compound is encapsulated with resin which does not carry out compatibility to the resin binder (5) of the sheet. The optical sheet converts an ultraviolet light, which is emitted by a light source, into a visible light.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) light diffusion sheet (1), which uses the optical sheet; and

(2) back light unit of liquid crystal

display, which uses the optical sheet.

USE - For back light unit of liquid crystal

display (claimed) and portable electronic devices such as mobile telephone and notebook personal computer, and as hologram sheet, polarization sheet, light reflection preventing sheet, light reflecting sheet, diffraction grating sheet, interference-filter sheet, color filter sheet, optical wavelength transformation sheet, prism sheet, light-guide plate and light-diffusion sheet.

ADVANTAGE - The optical sheet effectively converts the ultraviolet light into visible light, without raising the power consumption of light source, and improves luminance of liquid crystal display.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional view of the light diffusion sheet.

Light diffusion sheet 1

Base material layer 2

Light diffusion layer 3

Resin binder 5

Capsulated resin particle 6

Dwg.1/2

TECH JP 2005128140 AUPTX: 20050621

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Compound: The organic compound, which emits phosphor, is a complex of iridium or platinum.

ABEX JP 2005128140 AUPTX: 20050621

SPECIFIC COMPOUNDS - The phosphor-emitting organic compound is of formulae (I-VI).

EXAMPLE - high tenor N-08 (TM) (polyoxyethylene alkylphenyl-ether sulfo ammonium) (in mass parts) (0.5) was dissolved in deionized water (900), mixed with mixture containing compound (4.9) of formula (VI), compound (0.1) of formula (V), methyl methacrylate (85), and trimethacrylic acid trimethylol propane (10) and heated at 75 degrees C for 5 hours to obtain encapsulated resin particle. The obtained resin particle (150) was dispersed in acryl polyol resin (100) and applied on surface of a polyester film having thickness of 100 microns, and dried to form a light diffusion layer having thickness of 15 microns. A coating liquid (b) obtained by mixing acryl polyol (100) and silica (10) was applied on reverse side of polyester film and dried to form sticking prevention layer of a light diffusion sheet (optical sheet). The back light unit provided with obtained optical sheet had improved luminance. The ultraviolet light emitted from a light source was effectively converted into a visible light by the optical sheet.

FS CPI EPI GMPI

FA AB; GI; DCN

MC CPI: A12-L03B; E05-N02B; E05-N02C; E24-A06A; L03-G05B7

EPI: U14-K01A1C; U14-K01A4C; X26-D01; X26-U04

L52 ANSWER 4 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2005-269130 [28] WPIX  
DNN N2005-221690

TI Active matrix type LCD, has diffusion layer with  
larger haze value arranged between polarizing plate and opposing  
substrate for diffusing light transmitted from  
liquid crystal display layer in  
arbitrary direction.

DC P81 U14

PA (TOSH-N) TOSHIBA MATSUSHITA DISPLAY TECHNOLOGY CO

CYC 1

PI JP 2005099499 A 20050414 (200528)\* 9 G02F001-1335 <--

ADT JP 2005099499 A JP 2003-333976 20030925

PRAI JP 2003-333976 20030925

IC ICM G02F001-1335

AB JP2005099499 A UPAB: 20050504

NOVELTY - A back-light unit (400) illuminates a transmissive  
liquid crystal display panel (10) from rear  
side of array substrate (100). A diffusion layer (DF) is  
arranged between polarizing plate (PL2) and opposing substrate  
(200) of the panel, to diffuse light transmitted from  
liquid crystal layer (300) in arbitrary direction. The haze  
value of the diffused layer is 5-90% which is larger than haze  
value of the polarizing plate.

USE - Active matrix type LCD.

ADVANTAGE - Suppresses projection of ambient light source and  
interference light fully by arranging diffusion layer  
with larger haze value, between the substrate and the polarizing  
plate, hence improves the display quality of the LCD.

DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the  
LCD.

LCD panel 10

array substrate 100

opposing substrate 200

liquid crystal layer 300

back-light unit 400

diffusion layer DF

polarizing plates PL1, PL2

Dwg.2/5

FS EPI GMPI

FA AB; GI

MC EPI: U14-K01A1C

L52 ANSWER 5 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2005-129868 [14] WPIX  
DNN N2005-111162

TI Liquid crystal display with improved  
reflection strength of incident light - capable of  
preventing occurrence of destructive interference from  
reflective light so as to increase brightness of  
liquid crystal display.

DC P81 U14

IN CHEN, H

PA (TASE-N) TAIWAN SEMICONDUCTOR MFG CO LTD

CYC 1

PI TW 594242 A 20040621 (200514)\* G02F001-1335 <--

ADT TW 594242 A TW 2003-101220 20030121

PRAI TW 2003-101220 20030121

IC ICM G02F001-1335

AB TW 594242 A UPAB: 20050228

NOVELTY - The present invention provides a liquid crystal display with improved reflection strength of incident light for increasing the displayed brightness of liquid crystal display, which includes: a liquid crystal arrangement layer; a plurality of reflective layers having a thickness of a plurality of layers configured below the liquid crystal arrangement layer; and, a refractive layer configured below the reflective layer for reflecting the light; wherein, the reflective layer nearest the refractive layer is the first reflective layer, and the reflective index of the odd reflective layer is smaller than the adjacent even-numbered reflective layer.

Dwg.0/1

FS EPI GMPI  
FA AB  
MC EPI: U14-K01A1C

L52 ANSWER 6 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2004-342150 [32] WPIX

DNN N2004-273391 DNC C2004-130068

TI Optical sheet used in backlight of liquid crystal display, has acrylic group resin coating layer of predetermined thickness on back surface of transparent base material.

DC A14 A89 P81 Q71 U14 V07 W05

PA (KEIW-N) KEIWA SHOKO KK

CYC 1

PI JP 2003004912 A 20030108 (200432)\* 7 G02B005-02

ADT JP 2003004912 A JP 2001-185813 20010620

PRAI JP 2001-185813 20010620

IC ICM G02B005-02

ICS F21V008-00; G02B001-10; G02B006-00; G02F001-13357

ICI F21Y103:00

AB JP2003004912 A UPAB: 20040520

NOVELTY - An optical functional layer (3) made of polymer dispersed with air bubbles, and an acrylic group resin coating layer (4) of thickness of about 4.5-6.4  $\mu\text{m}$  are laminated on the front and back surfaces of a transparent base material (2).

DETAILED DESCRIPTION - The optical functional layer formed on the front surface of the transparent base material contains a binder (5) and a fibrous light-diffusion agent (6) and has predetermined surface roughness. The beads dispersed in the acrylic group resin coating layer on the back surface of the transparent base material, project from reverse side of the resin coating layer.

An INDEPENDENT CLAIM is included for backlight.

USE - For use in backlight (claimed) of liquid crystal display.

ADVANTAGE - Prevents generation of interference fringe, brightness irregularity and improves light transmittance by using resin coating layer of specific thickness.

DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the optical sheet.

Transparent base material 2

Optical functional layer 3

Acrylic group resin coating layer 4

Binder 5

Fibrous light diffusion agent 6

Dwg.1/3  
FS CPI EPI GMPI  
FA AB; GI  
MC CPI: A04-F01A; A12-L03B  
EPI: U14-K01A1C; U14-K01A4C; V07-F01A; W05-E05B1

L52 ANSWER 7 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2004-195888 [19] WPIX  
DNN N2004-155190

TI **Polarizing** plate for image display device e.g. LCD,  
has **reflectance** spectrum of different **wavelength**, with  
peak **interference** potential satisfying specific conditions.

DC P81 T01 U14 V05 W01 W03 W04

PA (NITL) NITTO DENKO CORP

CYC 1

PI JP 2004029505 A 20040129 (200419)\* 17 G02B005-30

ADT JP 2004029505 A JP 2002-187408 20020627

PRAI JP 2002-187408 20020627

IC ICM G02B005-30

ICS G02B001-10; G02B001-11; **G02F001-1335**

AB JP2004029505 A UPAB: 20040318

NOVELTY - The plate has total reflection factor less than 1.2%, Delta 2 less than 0.5%, 4 times of Delta 2 less than Delta 1, and Delta 2 less than Delta 3, where Delta 1, Delta 2 and Delta 3 are peaks of the **interference** potential in the reflectance spectrum of the plate for wavelengths 440 nm, 550 nm and 610 nm, respectively.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) optical element; and

(2) image display device.

USE - For optical element (claimed) used in image display device (claimed) e.g. LCD, organic electroluminescence display device, plasma display panel and cathode ray tube used in word processor, computer, television, monitor for car navigation and video cameras, mobile telephone, personal handyphone system (PHS) and personal digital assistant.

ADVANTAGE - The **light reflected** by the plate satisfying the conditions, does not exhibit specific color phase, hence favorable display quality is achieved.

DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the **polarizing** plate.

low **refractive** index layer 1

glare-proof layer 2

transparent conductive layer 3

transparent base film 4

**polarizer** 5

Dwg.1/4

FS EPI GMPI

FA AB; GI

MC EPI: T01-M06A; U14-K01A1C; V05-D01; W01-C01B3E; W01-C01D3C; W03-A08B;  
W04-M01

L52 ANSWER 8 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2004-108382 [11] WPIX

CR 2005-033797 [04]

DNN N2004-086155 DNC C2004-044234

TI Plastic film for image display unit, has **refractive** index of substrate and functional **layer** satisfying preset relation, and specific average **reflectance** of **light**.

DC A89 P73 P81 U14 V05

IN FUKUDA, K; MATSUFUJI, A  
 PA (FUJF) FUJI PHOTO FILM CO LTD  
 CYC 105

PI WO 2004000550 A1 20031231 (200411)\* EN 94 B32B027-08  
 RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS  
 LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW  
 W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK  
 DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR  
 KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH  
 PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN  
 YU ZA ZM ZW

AU 2003241186 A1 20040106 (200447) B32B027-08

EP 1515845 A1 20050323 (200521) EN B32B027-08

R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV  
 MC MK NL PT RO SE SI SK TR

KR 2005010848 A 20050128 (200535) B32B027-08

ADT WO 2004000550 A1 WO 2003-JP7930 20030623; AU 2003241186 A1 AU 2003-241186  
 20030623; EP 1515845 A1 EP 2003-730880 20030623, WO 2003-JP7930 20030623;  
 KR 2005010848 A KR 2004-719500 20041130

FDT AU 2003241186 A1 Based on WO 2004000550; EP 1515845 A1 Based on WO  
 2004000550

PRAI JP 2003-12625 20030121; JP 2002-183070 20020624;

JP 2002-268783 20020913

IC ICM B32B027-08

ICS G02B001-10; G02B001-11; G02F001-1335

AB WO2004000550 A UPAB: 20050603

NOVELTY - The plastic film comprises transparent plastic substrate (I),  
 primer **layer** and functional **layer** (II) in order. The  
**refractive index** (nS) of (I) and the **refractive index**  
 (nH) of the (II) satisfy the relation: 0.03 at most modulus of nS-nH. The  
 average **reflectance of light of wavelength**  
 540-550 nm incident perpendicular onto face of the film at an interface  
 among (I) and (II) is at most 0.02%.

USE - For image display unit (claimed) such as cathode ray tube,  
**liquid crystal display** and plasma  
**display panel**, for substrate of anti-scattering film of glass,  
 pressure sensitive adhesive tape and transparent sticker.

ADVANTAGE - The generation of **interference** spots on the  
 plastic film are prevented effectively.

Dwg.0/0

FS CPI EPI GMPI

FA AB

MC CPI: A12-E11; A12-S06

EPI: U14-K01A4A; V05-M05F

L52 ANSWER 9 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2003-738817 [70] WPIX

CR 1999-091587 [08]; 2000-308125 [27]; 2003-105906 [10]; 2003-702618 [67]

DNN N2003-591365

TI Front illumination device for reflection-type **liquid**  
**crystal display** device, has reflection prevention film  
 provided on boundary surface of light guide.

DC P81 Q71 U14 X26

PA (SHAF) SHARP KK

CYC 1

PI JP 2003262867 A 20030919 (200370)\* 32 G02F001-13357 <--

ADT JP 2003262867 A Div ex JP 1997-351794 19971219, JP 2003-18035 19971219

PRAI JP 1997-78211 19970328

IC ICM G02F001-13357

ICS F21V008-00; G02B006-00; G02F001-1335

ICI F21Y103:00

AB JP2003262867 A UPAB: 20050419

NOVELTY - A reflection prevention film (13) is formed on a boundary surface (28) of a light guide having an inclined portion (22) **reflecting light** from the light source (26) towards the boundary surface.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for reflection-type **liquid crystal display** device.

USE - Front illumination device for reflection-type **liquid crystal display** device (claimed) for personal digital assistant and mobile computer.

ADVANTAGE - Improves utilization effectiveness of the light from the light source, prevents the generation of **interference** due to the **reflected light** and non-uniformity of brightness distribution and displays bright high definition image irrespective of the surrounding environment.

DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the structure of the reflection-type **liquid crystal display** device.

liquid crystal layer 12  
reflection prevention film 13  
polarizing plate 18  
insulation film 19  
flat portion 21  
inclined portion 22  
boundary surfaces 23, 28  
incidence plane 25  
light source 26  
reflective mirror 27

Dwg. 37/52

FS EPI GMPI

FA AB; GI

MC EPI: U14-K01A4C; X26-D01F

L52 ANSWER 10 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2003-666334 [63] WPIX

DNN N2003-531831 DNC C2003-181439

TI Reflection prevention hard-coat sheet for optical element, has **refractive-index layer**, high reference-index layer and low **refractive-index layer** sequentially laminated on transparent base film.

DC A89 G02 L03 P73 P81 U14

PA (NITL) NITTO DENKO CORP

CYC 1

PI JP 2003075603 A 20030312 (200363)\* 10 G02B001-11

ADT JP 2003075603 A JP 2001-265678 20010903

PRAI JP 2001-265678 20010903

IC ICM G02B001-11

ICS B32B007-02; G02B001-10; G02B005-30; **G02F001-1335**

AB JP2003075603 A UPAB: 20031001

NOVELTY - The sheet (A) has a **refractive-index layer** (11) of **refractive index** 1.5-1.7, a high **refractive index layer** (12) of **refractive index** 1.6-1.8 and a relatively low **refractive-index layer** (13) sequentially laminated on a transparent base film (1).

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (1) optical element; and
- (2) image display device.

USE - For optical elements (claimed) used in image display devices (claimed) such as flat-panel display (FPD), liquid crystal displays (LCD) and electroluminescence display device.

ADVANTAGE - Prevents interference fringe of reflected light. Improves the display quality.

DESCRIPTION OF DRAWING(S) - The figure shows a cross-sectional view of the reflection prevention hard-coat sheet.

transparent base film 1

refractive-index layer 11

high refractive-index layer 12

low refractive-index layer 13

sheet A

Dwg.1/3

FS CPI EPI GMPI

FA AB; GI

MC CPI: A12-E11; A12-L03B; G02-A05; L03-G02; L03-G05B; L03-G05F

EPI: U14-J02; U14-K01A1C

L52 ANSWER 11 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2003-648926 [62] WPIX

DNN N2003-516194 DNC C2003-177755

TI Reflection prevention sheet for reflection prevention polarizing plate, consists of microparticles having set refractive index difference with respect to high refractive index layer for forming fine groove structure.

DC A89 G02 L03 P73 P81 P85 U14

PA (NITL) NITTO DENKO CORP

CYC 1

PI JP 2003075605 A 20030312 (200362)\* 11 G02B001-11

ADT JP 2003075605 A JP 2001-269318 20010905

PRAI JP 2001-269318 20010905

IC ICM G02B001-11

ICS B32B007-02; G02B005-02; G02B005-30; G02F001-1335;  
G09F009-00

AB JP2003075605 A UPAB: 20030928

NOVELTY - Microparticles (A) having a refractive index difference of plus or minus 0.1% with respect to the high refractive index layer (12), is dispersed in the high refractive index layer for forming a high refractive index layer surface having a fine groove structure.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) reflection prevention polarizing plate; and

(2) image display device.

USE - Reflection prevention sheet for reflection prevention polarizing plate (claimed) for image display device (claimed) e.g. flat panel display device, liquid crystal display device and electroluminescent display device.

ADVANTAGE - Prevents surface reflection and the formation of interference fringe of the reflected light and forms fine groove structure.

DESCRIPTION OF DRAWING(S) - The figure shows the reflection prevention sheet.

high refractive index layer 12

microparticles A

Dwg.1/3

FS CPI EPI GMPI

FA AB; GI

MC CPI: A12-L03B; G02-A05; L03-G02A; L03-G05B; L03-G05F  
EPI: U14-J02; U14-K01A1C

L52 ANSWER 12 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2003-005158 [01] WPIX  
DNN N2003-004177

TI Reflection type color **liquid crystal display**  
device, has hologram structure formed by alternatively arranged liquid  
crystal **layer** and polymeric **layer** comprising polymeric  
material with double **refraction** characteristics.

DC P81 P84 U14 V07

PA (SHIH) SEIKO EPSON CORP

CYC 1

PI JP 2002268051 A 20020918 (200301)\* 9 G02F001-1334 <--

ADT JP 2002268051 A JP 2001-70125 20010313

PRAI JP 2001-70125 20010313

IC ICM **G02F001-1334**

ICS G02B005-20; G02B005-32; **G02F001-1335**; G03H001-22

AB JP2002268051 A UPAB: 20030101

NOVELTY - A hologram structure (6) is formed in between a pair of  
substrates (2,3). The hologram with **interference** fringe  
structure is formed by alternatê arrangement of liquid crystal  
**layer** (4) and polymeric **layer** (5) comprising polymeric  
material with double **refraction** characteristics.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for  
**liquid crystal display** device manufacturing  
method.

USE - Reflection type **liquid crystal**  
**display** device with hologram structure.

ADVANTAGE - The relative spectral band width, wavelength  
characteristics and directivity of **reflected light** of  
LCD device is improved.

DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the  
**liquid crystal display** device.  
Substrates 2,3

Liquid crystal **layer** 4

Polymeric **layer** 5

Hologram structure 6

Dwg.1/5

FS EPI GMPI

FA AB; GI

MC EPI: U14-K01A1C; U14-K01A2; V07-F02B; V07-F02C; V07-K05

L52 ANSWER 13 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2002-536510 [57] WPIX  
CR 2005-140562 [15]

DNN N2002-424840 DNC C2002-152078

TI Back light for **liquid crystal displays**

comprises light source, light guide made of non-absorptive material, and  
reflective **layer** made of reflective material and which  
**reflects maximum** amount of incident light energy.

DC A89 L03 P81 Q71 U14 V07

IN FARIS, S M; HOCHBAUM, A; NIU, W; YINGQUI, J; YINGQIU, J

PA (REVE-N) REVEO INC; (FARI-I) FARIS S M; (HOCH-I) HOCHBAUM A; (NIUW-I) NIU  
W; (YING-I) YINGQIU J

CYC 96

PI US 2002051103 A1 20020502 (200257)\* 12 G02F001-1335 <--

WO 2003002908 A1 20030109 (200306)# EN F21V008-00

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TR TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK  
 DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ  
 LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD  
 SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

TW 571147 A 20040111 (200442) G02F001-13 <--  
 AU 2001271492 A1 20030303 (200454)# F21V008-00  
 US 6801270 B2 20041005 (200465) G02F001-1335 <--  
 ADT US 2002051103 A1 Provisional US 2000-214107P 20000626, US 2001-893163  
 20010627; WO 2003002908 A1 WO 2001-US20346 20010627; TW 571147 A TW  
 2002-101275 20020125; AU 2001271492 A1 AU 2001-271492 20010627, WO  
 2001-US20346 20010627; US 6801270 B2 Provisional US 2000-214107P 20000626,  
 US 2001-893163 20010627  
 FDT AU 2001271492 A1 Based on WO 2003002908  
 PRAI US 2000-214107P 20000626; US 2001-893163 20010627;  
 WO 2001-US20346 20010627; AU 2001-271492 20010627  
 IC ICM F21V008-00; G02F001-13; G02F001-1335  
 ICS F21V009-00; G02B006-04; G02B006-10; H04B010-12  
 AB US2002051103 A UPAB: 20050303

NOVELTY - A back light (10') comprises a light source, a light guide which  
 absorbs less than 5% of incident light energy and comprising  
 non-absorptive material, and a reflective **layer** which reflects  
 at least 95% of incident light energy and comprising highly reflective  
 material. The reflective material comprises aluminum, silver, barium  
 sulfate, magnesium oxide, and organic materials.

DETAILED DESCRIPTION - A back light (10') comprises a light source, a  
 light guide made of non-absorptive material and a reflective **layer**  
 made of highly reflective material. The non-absorbent material is selected  
 from acrylic, polycarbonate, poly(methyl-methacrylate). The light guide  
 absorbs less than 5% of incident light energy. The  
**reflective** material comprises aluminum, silver, barium sulfate,  
 magnesium oxide and organic materials. The reflective **layer**  
 reflects at least 95% of incident light energy.

INDEPENDENT CLAIMS are included for the following:

(1) **liquid crystal display** which

comprises the back light, an electrically addressable array including a  
 light crystal cell, a non-absorptive filtering array and a broadband  
**polarizer**;

(2) fabrication of back light; and

(3) fabrication of **liquid crystal display**

which involves superposing non-absorptive spectral filtering array with  
 reflective **layer** and superposing electrically addressable array  
 with the reflective **layer**.

USE - **Liquid crystal displays**  
 (claimed).

ADVANTAGE - The back light provides highly efficient light recycling,  
 and highly bright and efficient **liquid crystal**  
**displays**.

DESCRIPTION OF DRAWING(S) - The figure shows cross-section of the  
 back light for computational purposes.

Back light 10'

Dwg. 2A/5

TECH US 2002051103 A1UPTX: 20020906

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Reflective

**Layer**: The reflective **layer** which is a diffused  
 reflective **layer**, reflects at least 95%, preferably at least 98%  
 of incident light energy. The diffused **reflective**  
**layer** contains barium sulfate and organic materials such as  
 Spectralon and Melinex.

Preferred Back **Light**: The back light reflects  
 at least 85%, preferably at least 95% of incident light energy. The light

guide absorbs less than 1%, preferably less than 0.5% of incident light energy. The back light further comprises a diffused layer which absorbs less than 5% of incident light energy. Especially the back light contains the light source, a bundle of optical fibers, and the reflective layer. The optical fibers comprising cladding material are provided in optically upstream and downstream sides. The optical fiber bundle is configured to receive light from light source and distribute the light to the reflective layer. The light source is an incandescent lamp. The back light further comprises one or more lenses configured to couple light from light source into optically upstream side of the optical fibers. The optically upstream side of optical fiber is positioned in operative engagement with light source for coupling light. The optically downstream side of optical fibers are distributed in orderly pattern such as hexagonal, rectangular, square, symmetrical, triangular and octagonal or in random pattern on the reflective layer. The cladding is roughened by mechanically abrading a portion of downstream side of the optical fiber or by immersing the downstream side of optical fiber into aqueous solution of hydrofluoric acid.

**Preferred Filtering Array:** The filtering array comprises at least one of cholesteric liquid crystal polarizing layer, interference thin film stack, Bragg reflector constructed of birefringent polymers, and a holographic filter, preferably cholesteric liquid crystal polarizing layer.

**Preferred Polarizer:** The broadband polarizer comprises a cholesteric liquid crystal polarizing layer.

FS CPI EPI GMPI  
FA AB; GI  
MC CPI: A12-L03B; L03-G05B  
EPI: U14-K01A4C; V07-F01

L52 ANSWER 14 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2002-527954 [56] WPIX  
DNN N2002-417956

TI **Liquid crystal information display** for optical modulators, has layers with maximum and minimum interference for one wavelength of linearly polarized light at exit of display and at boundary between layers.

*applicant*

DC P81 U14  
IN LAZAREV, P I  
PA (OPTI-N) OPTIVA INC; (KVAN-R) KVANTA INVEST STOCK CO; (LAZA-I) LAZAREV P I  
CYC 100

PI WO 2002046836 A2 20020613 (200256)\* EN 10 G02F001-13363 <--  
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ  
NL OA PT SD SE SL SZ TR TZ UG ZM ZW  
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK  
DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR  
KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT  
RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZM ZW  
US 2002105608 A1 20020808 (200259) G02F001-1335 <--  
AU 2002025935 A 20020618 (200262) G02F001-13363 <--  
EP 1340117 A2 20030903 (200365) EN G02F001-13363 <--  
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT  
RO SE SI TR  
RU 2225025 C2 20040227 (200425) G02F001-13 <--  
JP 2004515807 W 20040527 (200435) 22 G02F001-13363 <--  
CN 1479885 A 20040303 (200436) G02F001-13363 <--  
KR 2004012694 A 20040211 (200438) G02F001-13363 <--

ADT WO 2002046836 A2 WO 2001-US46675 20011205; US 2002105608 A1 US 2001-6166

20011204; AU 2002025935 A AU 2002-25935 20011205; EP 1340117 A2 EP 2001-995377 20011205, WO 2001-US46675 20011205; RU 2225025 C2 RU 2000-130482 20001206; JP 2004515807 W WO 2001-US46675 20011205, JP 2002-548508 20011205; CN 1479885 A CN 2001-820137 20011205; KR 2004012694 A KR 2003-707551 20030605

FDT AU 2002025935 A Based on WO 2002046836; EP 1340117 A2 Based on WO 2002046836; JP 2004515807 W Based on WO 2002046836

PRAI US 2001-6166 20011204; RU 2000-130482 20001206

IC ICM G02F001-13; G02F001-1335; G02F001-13363  
ICS G02F001-1337

AB WO 200246836 A UPAB: 20020903  
NOVELTY - The liquid crystal layers have maximum or minimum interference for a wavelength of linearly polarized light at the exit of the display and/or at the boundary between a liquid crystal layer and a functional layer.  
USE - For optical modulator.  
ADVANTAGE - Increase of brightness and contrast of image is achieved by lowering the losses and enhancing the optical characteristics of the display. The fraction of energy of the transmitted light is increased by the interference of the reflected ray.  
DESCRIPTION OF DRAWING(S) - The figure shows a cross-sectional view of the transmission display.  
Dwg.2/2

FS EPI GMPI  
FA AB; GI  
MC EPI: U14-K01

L52 ANSWER 15 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2002-493563 [53] WPIX  
DNN N2002-390256 DNC C2002-140381

TI Optical element for use in optical filter, liquid crystal element, comprises a multilayer structure consisting of a liquid crystal material and a polymerized hardened product of a polymeric composition.

DC A14 A89 G06 L03 P81 U11 U14 V07  
PA (DNIN) DAINIPPON INK & CHEM INC  
CYC 1

PI JP 2002098827 A 20020405 (200253)\* 8 G02B005-28  
ADT JP 2002098827 A JP 2000-292002 20000926  
PRAI JP 2000-292002 20000926

IC ICM G02B005-28  
ICS B29C039-10; B29C039-12; G02F001-13; G02F001-1334; G02F001-1347

ICI B29K033:04, B29L011:00

AB JP2002098827 A UPAB: 20020820  
NOVELTY - An optical element has a multilayer structure consisting of (a) a liquid crystal material; and the (b) polymerized hardened product of a polymeric composition between two transparent substrates having an electrode layer each.  
DETAILED DESCRIPTION - The polymeric composition contains: (b) a polymeric compound containing a (meth)acrylate having 5-25C alkyl group at its side chain; and (c) a photopolymerization initiator. The liquid crystal materials and the polymerized hardened products are formed in alternating layers. The content of the liquid crystal material layers is different from that of the polymerized hardened products. The optical element periodically changes its refractive index.  
USE - The method produces the optical element for use in an optical filter, liquid crystal display element, liquid crystal dimmer element.

**ADVANTAGE** - The optical element selectively **transmits** and **reflects light** at the ultraviolet light, visible light, and near infrared ray regions and reversibly controls the degree of reflection by electric field application. Its operating voltage is lower than that of a conventional optical element formed of a multilayer structure of a liquid crystal and a polymerized hardened product.

Dwg.0/3

TECH JP 2002098827 AUPTX: 20020820

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Liquid Crystal Material: contains a liquid crystal having a tolan skeleton or, a cyano group at its terminal. Production: Comprises: (i) polymerizing the liquid crystal material with the polymeric composition by irradiation with **interference** light; (ii) forming the multilayer structure.

FS CPI EPI GMPI

FA AB

MC CPI: A04-F06E; A08-C01; A12-L03B; A12-L03D; G06-D06; G06-F03C; L03-G02B; L03-G05B

EPI: U11-A03A; U14-K01; U14-K01A1G; U14-K01A2; V07-K10A

L52 ANSWER 16 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2002-328564 [36] WPIX

DNN N2002-257832 DNC C2002-094853

TI Anti-static film for display, comprises transparent substrate surface provided with hard coat **layer** containing resin, conductive material and low **refractive** index material, and having preset properties.

DC L03 P73 P81 U11 U14

IN MURATA, C; YAMAMOTO, T

PA (TOMO) TOMOEGAWA SEISHISHO KK; (TOMO) TOMOEGAWA PAPER CO LTD; (MURA-I) MURATA C; (YAMA-I) YAMAMOTO T

CYC 4

PI US 2002018163 A1 20020214 (200236)\* 12 G02F001-1333 <--

JP 2001316504 A 20011116 (200236) 12 C08J007-04

KR 2001100950 A 20011114 (200236) G02B001-10

TW 539868 A 20030701 (200379) G02B001-10

JP 3560532 B2 20040902 (200458) 17 C08J007-04

ADT US 2002018163 A1 US 2001-845255 20010501; JP 2001316504 A JP 2000-133184 20000502; KR 2001100950 A KR 2001-23706 20010502; TW 539868 A TW 2001-110535 20010502; JP 3560532 B2 JP 2000-133184 20000502

FDT JP 3560532 B2 Previous Publ. JP 2001316504

PRAI JP 2000-133184 20000502

IC ICM C08J007-04; G02B001-10; **G02F001-1333**

ICS B32B007-02; C03C017-32; C08K003-00; C08K003-36; C08L101-00; C09K003-16

AB US2002018163 A UPAB: 20020610

NOVELTY - An anti-static film (10) for display, comprises a hard coat **layer** (12) provided on a surface of a transparent substrate (11) directly or via another **layer**. The hard coat **layer** contains at least resin, conductive material and low **refractive** index material. The hard coat **layer** has surface electric resistance of 1.0 multiply 10<sup>11</sup> Omega /square or less, and Y value obtained by 5 deg. specular reflectance of 4.0% or less.

USE - For use in **displays** such as liquid crystal displays (LCD), plasma displays (PDP), cathode ray tube (CRT), and electroluminescent (EL), for use in television and computer technologies, especially LCD useful in lap-top-type personal computers and word processors, portable telephones, various portable terminals, etc.

**ADVANTAGE** - The anti-static film added with low **refractive** index material, has maintained superior optical properties, physical

properties and anti-static properties, with reduced reflectivity and prevented **interference** unevenness. The anti-static film in addition has maintained superior haze value, total **light transmittance**, and physical properties such as adhesion and pencil hardness. The overall color of the anti-static film for display, is achromatic, with superior anti-reflection property, and superior contrast and color of image.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic cross-sectional drawing showing a structure of the anti-static film.

Anti-static film 10

Transparent substrate 11

Hard coat layer 12

Dwg.1/1

TECH US 2002018163 A1UPTX: 20020610

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Material: The low **refractive** index material is silica sol. The conductive material is metal oxide particles.

FS CPI EPI GMPI

FA AB; GI

MC CPI: L03-G05; L03-G05B

EPI: U11-D01C3; U14-K01A1C

L52 ANSWER 17 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2002-001635 [01] WPIX

DNN N2002-001151

TI Optical display device sets **light transmittance** to specific value when angle of light radiation direction is from 0 to 60 degrees, and keeps degree of **interference** within limits when setting mean value.

DC P81 P85 U14 W02 W03

PA (IDEK) IDEMITSU KOSAN CO LTD

CYC 1

PI JP 2000347155 A 20001215 (200201)\* 20 G02F001-13 <--

ADT JP 2000347155 A JP 1999-161666 19990608

PRAI JP 1999-161666 19990608

IC ICM **G02F001-13**

ICS G02B027-26; G09F009-00; G09F009-35

AB JP2000347155 A UPAB: 20020105

NOVELTY - When the angle of the direction of radiation of light opposing to a normal line of a liquid crystal element is between 0 and 60 degrees, each **light transmittance** measured for every measurement space, DELTA theta, is set to T. When setting a mean value to Tave, the degree of **interference** is expressed to be within the limits of 0 to .09.

DETAILED DESCRIPTION - A liquid crystal **layer** (58) is supported between a pair of boards (52,64) with transparent electrodes (54,62).. A **polarizing** plate (68,70) is provided on the surface of each board.

USE - For e.g. three-dimensional **display** apparatus, color **liquid crystal** shutter.

ADVANTAGE - Reduces influence of multiple interferences to wide range viewing angle.

DESCRIPTION OF DRAWING(S) - Figure is sectional view of the optical display device.

Board 52,64

Transparent electrode 54,62

Liquid crystal **layer** 58

**Polarizing** plate 68,70

Dwg.9/12

FS EPI GMPI

FA AB; GI  
MC EPI: U14-K01A1C; W02-F03B; W03-A08B; W03-A08E; W03-A08E7; W03-A12A

L52 ANSWER 18 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2001-373967 [39] WPIX  
DNN N2001-273598 DNC C2001-114199  
TI **Liquid crystal display** with black matrixes  
of low reflectivity which can reduce **reflection of back**  
**light.**  
DC L03 P81 U11 U14  
IN CHOI, S E; KIM, Y J; CHOI, S U  
PA (HYNI-N) HYNIX SEMICONDUCTOR INC; (CHOI-I) CHOI S U; (KIMY-I) KIM Y J  
CYC 2  
PI US 2001003470 A1 20010614 (200139)\* 20 G02F001-13 <--  
KR 2001054927 A 20010702 (200204) G02F001-1335 <--  
ADT US 2001003470 A1 US 2000-727555 20001201; KR 2001054927 A KR 1999-55923  
19991208  
PRAI KR 1999-55923 19991208  
IC ICM G02F001-13; G02F001-1335  
ICS G02B005-20  
AB US2001003470 A UPAB: 20010716  
NOVELTY - **Liquid crystal display** (  
LCD) with black matrix of low reflectivity capable of reducing the  
**reflection back light.**  
DETAILED DESCRIPTION - The black matrix includes a photoshield  
layer formed on the **back** surface of a **front**  
substrate, and at least one internal photo-interference  
layer formed over the photoshield layer. The internal  
interference layer has a **refraction** index  
different from that of the photoshield layer.  
USE - A black matrix of low reflectivity for LCD.  
ADVANTAGE - Reduces **reflection of back**  
**light of LCD.**  
DESCRIPTION OF DRAWING(S) - Drawing shows sectional view of black  
matrixes of low reflectivity.  
Back surface of front substrate 40  
Chromium oxide layer 41  
Chromium layer 42  
Chromium oxide layer 43  
Dwg.7/13  
TECH US 2001003470 A1UPTX: 20010716  
TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - The internal phot-  
interference layer has a double layer  
structure comprising chromium nitride layer and a chromium oxide  
layer.  
FS CPI EPI GMPI  
FA AB; GI  
MC CPI: L03-G05B  
EPI: U11-C18D; U14-K01A1C

L52 ANSWER 19 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2001-240743 [25] WPIX  
DNN N2001-172715 DNC C2001-072397  
TI **Liquid crystal** optical element for **display**  
device, has polymeric material distributed periodically in liquid crystal  
material to limit liquid crystal molecular motion.  
DC L03 P81 U14  
PA (AGEN) AGENCY OF IND SCI & TECHNOLOGY; (NIDE) NEC CORP; (SHIN-N) SHIN  
ENERGY SANGYO GIJUTSU SOGO KAIHATSU  
CYC 1

PI JP 2001056460 A 20010227 (200125)\* 13 G02F001-1334 <--  
 ADT JP 2001056460 A JP 1999-230838 19990817  
 PRAI JP 1999-230838 19990817  
 IC ICM G02F001-1334  
 ICS C09K019-02; C09K019-54  
 AB JP2001056460 A UPAB: 20010508

NOVELTY - The liquid crystal optical element has a light control layer containing liquid crystal material. A polymeric material (5) is distributed periodically in liquid crystal material to limit motion of liquid crystal molecules, in the liquid material.

DETAILED DESCRIPTION - A light control layer containing positive or negative anisotropy liquid crystal material and polymeric material (5) of multifunctional monomers or oligomers, is supported between a pair of glass substrates (2,9), respectively. The polymeric material occupies 1-15 wt% of transparent material layer, and is distributed periodically with periodicity of 2 or more, like a network. The polymeric material gets twisted around the liquid crystal molecule and limits the motion of liquid crystal molecule. The perpendicular or horizontal level orientation of glass substrate is done. An electric field is supplied parallel to substrate flat surface, and transparent electrodes (3,8) change the direction of electric field. Two types of visible rays differing in strength and wavelength, are reflected selectively and simultaneously by the optical element, and the selective reflection intensity of light rays changes by changing the direction of electric field. The selective reflection strength of visible light increases or decreases by increasing the applied voltage. An INDEPENDENT CLAIM is also included for liquid crystal optical element manufacturing method which involves injecting a solution containing a mixture of liquid crystal material, a photoinitiator which absorbs light of wavelengths more than 400 nm and a polymeric precursor between a pair of glass substrates. The polymeric material is made to exist periodically with periodicity of 2 or more, in the liquid crystal material by irradiating a visible laser light in which interference of pair of beams takes place and then the polymeric material limits the motion of liquid crystal molecule in liquid crystal material.

USE - For selective reflection-type polarizing plate, for displaying character, figure by controlling reflection or permeation and interruption, in a display device.

ADVANTAGE - The liquid crystal optical element has low drive voltage and excels in hysteresis characteristics, high reflection rate and also enables multicolor display by using single display pixel.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional drawing of liquid crystal optical element.

Glass substrates 2,9  
 Transparent electrodes 3,8  
 Polymeric material 5

Dwg.1/19

FS CPI EPI GMPI  
 FA AB; GI  
 MC CPI: L03-D01D3; L03-G05B  
 EPI: U14-K01A1

L52 ANSWER 20 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 2001-232475 [24] WPIX  
 DNN N2001-166132  
 TI Polarization element for liquid crystal display device, has reflecting type polarizing plate with specified surface roughness and hardness.  
 DC P81 U14

IN KAMEYAMA, T; MOTOMURA, H  
PA (NITL) NITTO DENKO CORP  
CYC 2

PI JP 2001042125 A 20010216 (200124)\* 7 G02B005-30  
US 6339501 B1 20020115 (200208) G02F001-13 <--  
ADT JP 2001042125 A JP 1999-221388 19990804; US 6339501 B1 US 2000-632637  
20000804

PRAI JP 1999-221388 19990804

IC ICM G02B005-30; G02F001-13  
ICS G02B005-02; G02F001-1335; G02F005-30

AB JP2001042125 A UPAB: 20010502

NOVELTY - The reflection-type **polarizing plate** (1) separating the irradiated natural light to obtain **polarized transmitted light and reflected light**

, has a mean average roughness (Ra) of 0.01-0.1  $\mu$  m on one side and has hardness of H-4h according to pencil hardness. The number of projections of height of 0.5-1  $\mu$  m is 10 or more per 1 mm and of height more than 1  $\mu$  m is 2 or less.

DETAILED DESCRIPTION - **Polarization** element has ultra violet cured resin **layer** with minute roughness structure with spherical particles of mean diameter 0.5-5  $\mu$  m on plate, with cholesteric liquid crystal **layer** and quarter wavelength plate..

USE - **Polarization** element for liquid crystal display (LCD) device.

ADVANTAGE - The minute and moderate surface hardness of the plate prevents sticking and damage with adjacent optical sheet, **interference fringes** are prevented by diffusion effect adjoining a prism sheet. A thin liquid crystal display device with more brightness and display quality is realized.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional view of **polarization** element.

**Polarizing plate 1**

Dwg.1/4

FS EPI GMPI  
FA AB; GI  
MC EPI: U14-K01A1C

L52 ANSWER 21 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2001-165138 [17] WPIX

DNN N2003-585229

TI Reflectance-type liquid crystal display for portable television, includes uneven insulating **layer** having multiple convex and concave portions which are arranged regularly to cause **interference** effect.

DC P81 U14

IN CHANG, Y H; KIM, W H; KIM, Y B; SOHN, H H; JANG, Y H; SON, H H

PA (GLDS) LG PHILIPS LCD CO LTD

CYC 2

PI KR 2000039482 A 20000705 (200117)\* G02F001-1335 <--  
US 6414735 B1 20020702 (200370)B 10 G02F001-1335 <--  
KR 421902 B 20040904 (200506) G02F001-1335 <--

ADT KR 2000039482 A KR 1998-54832 19981214; US 6414735 B1 US 1999-432658  
19991003; KR 421902 B KR 1998-54832 19981214

FDT KR 421902 B Previous Publ. KR 2000039482

PRAI KR 1998-54832 19981214

IC ICM G02F001-1335

AB US 6414735 B UPAB: 20031030 ABEQ treated as Basic

NOVELTY - A light scattering film formed on a substrate (7), includes several transparent granules arranged randomly. An uneven insulating **layer** (2) has several convex and concave portions which are

arranged regularly to cause **interference** effect with respect to the transparent granules.

USE - For portable television, notebook computer, etc.

ADVANTAGE - By using uneven surface which **reflects** and scatters **light** in regular directions, desired reflectance characteristic is obtained easily. Prevents light **interference** and increases light intensity with uniform cell gap.

DESCRIPTION OF DRAWING(S) - The figures show the sectional diagrams of reflectance-type **liquid crystal display**.

substrates 1,7

uneven insulating **layer 2**

reflecting **layer 3**

liquid crystal **layer 4**

transparent electrode 5

**polarizer 9**

Dwg.6, 7/8

AB KR2000039482 A UPAB: 20031105

NOVELTY - A light scattering film formed on a substrate (7), includes several transparent granules arranged randomly. An uneven insulating **layer (2)** has several convex and concave portions which are arranged regularly to cause **interference** effect with respect to the transparent granules.

USE - For portable television, notebook computer, etc.

ADVANTAGE - By using uneven surface which **reflects** and scatters **light** in regular directions, desired reflectance characteristic is obtained easily. Prevents light **interference** and increases light intensity with uniform cell gap.

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substrates 1,7

uneven insulating **layer 2**

reflecting **layer 3**

liquid crystal **layer 4**

transparent electrode 5

**polarizer 9**

Dwg.6, 7/8

FS EPI GMPI

FA AB; GI

MC EPI: U14-K01A1C

L52 ANSWER 22 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2001-044165 [06] WPIX

DNN N2001-033270

TI **Liquid crystal display** device for video projectors, has **liquid crystal layer** whose **refractive** index is higher and smaller than orientation films formed on silicon and glass substrates, respectively.

DC P81 U14

PA (VICO) VICTOR CO OF JAPAN

GYC 1

PI JP 2000305084 A 20001102 (200106)\* 5 G02F001-1337 <--

ADT JP 2000305084 A JP 1999-110530 19990419

PRAI JP 1999-110530 19990419

IC ICM **G02F001-1337**

ICS **G02F001-1335**

AB JP2000305084 A UPAB: 20010126

NOVELTY - Reflection electrode (4) and orientation film (5) are formed on Si substrate (2), sequentially. Transparent electrode (8) and orientation film (7) are formed on interlayer (9) on glass substrate (10). Liquid crystal (LC) **layer (6)** is injected between films (5,7).

Refractive indices of LC layer and interlayer are higher and smaller than films (5,7), glass substrate and electrode (8), respectively.

USE - For video projectors.

ADVANTAGE - Prevents interference fringe and thereby improves reflecting rate. Offers bright light beam and improves optical efficiency. Improves productivity and improved heat release property.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional view of the display device.

Silicon substrate 2  
Reflection electrode 4  
Orientation films 5,7  
Liquid crystal layer 6  
Transparent electrode 8

Interlayer 9

Glass substrate 10

Dwg.1/4

FS EPI GMPI

FA AB; GI

MC EPI: U14-K01A1A; U14-K01A1C

L52 ANSWER 23 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2000-028148 [03] WPIX

DNN N2000-021172

TI Polarized light separation sheet for surface light source apparatus used in permeable liquid crystal display device, advertisement board - has coating layers consisting of spherical transparent beads having predetermined particle size formed on backside of transparent base sheet.

DC P81 U14

IN KASHIMA, K

PA (NIPQ) DAINIPPON PRINTING CO LTD; (KASH-I) KASHIMA K

CYC 4

PI	JP 11295523	A	19991029 (200003)*	13	G02B005-30	
	KR 99082877	A	19991125 (200055)		G02F001-1335	<--
	TW 424159	A	20010301 (200145)		G02B005-128	
	US 2002012169	A1	20020131 (200210)		G02B005-30	
	KR 294815	B	20010712 (200226)		G02F001-1335	<--
	JP 3434701	B2	20030811 (200354)	13	G02B005-30	
	US 6624937	B2	20030923 (200364)		G02B005-30	

ADT JP 11295523 A JP 1998-93560 19980406; KR 99082877 A KR 1999-11577 19990402; TW 424159 A TW 1999-105151 19990331; US 2002012169 A1 US 1999-285691 19990405; KR 294815 B KR 1999-11577 19990402; JP 3434701 B2 JP 1998-93560 19980406; US 6624937 B2 US 1999-285691 19990405

FDT KR 294815 B Previous Publ. KR 99082877; JP 3434701 B2 Previous Publ. JP 11295523

PRAI JP 1998-93560 19980406

IC ICM G02B005-128; G02B005-30; G02F001-1335

ICS G02B005-02; G02B005-04; G02B027-28; G02F001-13;  
G02F001-13357

AB JP 11295523 A UPAB: 20000118

NOVELTY - Coating layer (14) is formed on backside of transparent base sheet (12) having permeable characteristic for one polarized light component and reflection characteristic for another polarized light component of incident light. Coating layers contain transparent spherical beads having particle size of 1-10 mu m. Coating layers contact the flat surface (18A) of transparent material (18) via spherical beads.

USE - For surface light source apparatus used in permeable

liquid crystal display device for computer, television, and advertisement board.

ADVANTAGE - Prevents damage of the flat surface of the transparent material and eliminates the need for an optical contact member. Eliminates the generation of interference fringe by ambient light on polarized light separation sheet. DESCRIPTION OF DRAWING(S) - The figure shows the sectional view illustrating the coating layer formation process in the polarized light separation sheet. (12) Transparent base sheet; (14) Coating layer; (18) Transparent material; (18A) Flat surface of transparent material.

Dwg.4/15

FS EPI GMPI  
FA AB; GI  
MC EPI: U14-K01A1C

L52 ANSWER 24 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 1999-600961 [51] WPIX  
CR 1999-278412 [18]; 1999-528851 [45]; 1999-528885 [45]; 1999-610573 [24];  
1999-610574 [24]; 1999-610575 [24]  
DNN N1999-443009 DNC C1999-174920  
TI Light polarizer for e.g. liquid crystal display (LCD).  
DC A89 E24 L03 P81 U14 V07 W03  
IN BELYAEV, S V; KARPOV, I N; KHAN, I G; MALIMONENKO, N V; MIROSHIN, A A;  
SHISHKINA, E J; VOROZHTSOV, G N; ARKHIPOVA, S A; MASANOVA, N N; SHISHKINA,  
E YA; SHISHKINA, E YU  
PA (NIOPI-R) NIOPIK RES CENTRE; (MIRO-I) MIROSHIN A A; (NIOPI-R) NIOPIK RUSS  
FED SCI CENTRE; (CTPC-N) CTP CABLE TECHNOLOGY PROCUREMENT AG; (FEDE-R)  
FEDERALNOE GOS UNI PRED GOS; (NIOPI-R) NIOPIK METALS RES INST; (VORO-I)  
VOROZHTSOV G N  
CYC 24  
PI WO 9931535 A1 19990624 (199951)\* RU 106 G02B005-30  
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
W: CN JP KR US  
EP 961138 A1 19991201 (200001) EN G02B005-30  
R: CH DE ES FR GB GR IT LI NL  
RU 2136025 C1 19990827 (200033) G02B005-30  
CN 1251176 A 20000419 (200036) G02B005-30  
RU 2140094 C1 19991020 (200039) G02B005-30  
RU 2140097 C1 19991020 (200039) G02F001-13 <--  
RU 2140662 C1 19991027 (200040) G02F001-13 <--  
RU 2140663 C1 19991027 (200040) G02F001-13 <--  
RU 2143125 C1 19991220 (200043) G02B005-30  
RU 2143128 C1 19991220 (200043) G02F001-13 <--  
RU 2147759 C1 20000420 (200053) G02B005-30  
KR 2000071135 A 20001125 (200131) G02B005-30  
JP 2001517329 W 20011002 (200172) 120 G02B005-30  
US 6767594 B1 20040727 (200449) G02F001-1336 <--  
EP 961138 B1 20040728 (200452) EN G02B005-30  
R: CH DE ES FR GB GR IT LI NL  
EP 1450200 A2 20040825 (200456) EN G02B027-28  
R: DE ES FR GB GR IT NL  
DE 69825251 E 20040902 (200457) G02B005-30  
CN 1515915 A 20040728 (200469) G02B005-30  
US 2004265510 A1 20041230 (200503) C09K019-00  
ADT WO 9931535 A1 WO 1998-RU415 19981215; EP 961138 A1 EP 1998-964580  
19981215, WO 1998-RU415 19981215; RU 2136025 C1 RU 1997-121028 19971216;  
CN 1251176 A CN 1998-803683 19981215; RU 2140094 C1 RU 1998-101616  
19980112; RU 2140097 C1 RU 1998-103709 19980224; RU 2140662 C1 RU  
1998-103736 19980224; RU 2140663 C1 RU 1998-103743 19980224; RU 2143125 C1

RU 1998-104867 19980302; RU 2143128 C1 RU 1998-103710 19980224; RU 2147759 C1 RU 1998-104984 19980316; KR 2000071135 A WO 1998-RU415 19981215, KR 1999-707424 19990816; JP 2001517329 W WO 1998-RU415 19981215, JP 1999-532415 19981215; US 6767594 B1 WO 1998-RU415 19981215, US 1999-367543 19991006; EP 961138 B1 EP 1998-964580 19981215, WO 1998-RU415 19981215, Related to EP 2004-11720 19981215; EP 1450200 A2 Div ex EP 1998-964580 19981215, EP 2004-11720 19981215; DE 69825251 E DE 1998-625251 19981215, EP 1998-964580 19981215, WO 1998-RU415 19981215; CN 1515915 A Div ex CN 1998-803683 19981215, CN 2004-2411 19981215; US 2004265510 A1 Div ex WO 1998-RU415 19981215, Div ex US 1999-367543 19991006, US 2004-864461 20040610

FDT EP 961138 A1 Based on WO 9931535; KR 2000071135 A Based on WO 9931535; JP 2001517329 W Based on WO 9931535; US 6767594 B1 Based on WO 9931535; EP 961138 B1 Based on WO 9931535; EP 1450200 A2 Div ex EP 961138; DE 69825251 E Based on EP 961138, Based on WO 9931535; US 2004265510 A1 Div ex US 6767594

PRAI RU 1998-104984 19980316; RU 1997-121028 19971216;  
 RU 1998-101616 19980112; RU 1998-103709 19980224;  
 RU 1998-103710 19980224; RU 1998-103736 19980224;  
 RU 1998-103743 19980224; RU 1998-104867 19980302

IC ICM C09K019-00; G02B005-30; G02B027-28; **G02F001-13;**  
**G02F001-1336**  
 ICS G02B001-08; **G02F001-1335**

AB WO 9931535 A UPAB: 20000105

NOVELTY - **Polarizer** includes birefringent layer with anisotropic absorption, and has abnormal dispersion.

DETAILED DESCRIPTION - **Polarizer** includes at least one birefringent layer, and at least one such layer has anisotropic absorption property and at least one refraction index which increases with increase of wavelength of polarized light. At least one birefringent anisotropically-absorbing layer A has thickness sufficient to create interference extreme at the polarizer outlet at least for one linearly polarized light component (preferably interference minimum for one linearly polarized light component and interference maximum for other orthogonal linearly polarized light component. **Polarizer** preferably additionally contains at least one optically isotropic layer whose refraction index is equal or very close to one of indexes of birefringent layer. **Polarizer** also preferably contains one birefringent layer whose one refraction index is equal or very close to the one of indices of layer A, while remaining refraction indices of both these layers are different. At least one layer A contains at least two fragments of optional shape, having different colors and/or directions of polarization axis, and the polarizer preferably contains another such layer, with additional layer of transparent colorless or colored material between two A layers. **Polarizer** may additionally contain orienting layer made of inorganic materials and/or polymeric materials, or it may additionally include light-reflecting layer, preferably metallic. At least one of A layers is preferably formed on support (preferably consisting of birefringent plate or film), preferably at angle 45 deg. to basic optical axis of support. The polarizer includes: Polarizing device (1) separating the number of non-polarized light beams constituting incident light beamed at polarizer into the same number of identical pairs of variously polarized light beams, and device (2) for changing polarization of at least one group of identically polarized light beams included in the number of variously polarized light beams, with device (1) made in form of

focusing optical elements, optically coordinated with device (2), and containing at least one birefringent **layer** adjacent to at least one optical isotropic **layer**. At least one **layer A** is preferably made in form of assembly of volumetric or phase lens, while focusing optical element is made as zone plate, preferably amplitude zone plate whose even zones contain at least one **layer A**, adjacent to at least one optically isotropic **layer**, while non-even zones are made of optically isotropic material. Zone plate can be made in form of phase zone plate whose at least one **refraction** index is changing downward in at least one direction according to calculated rule. Device (2) preferably contains sectioned clearance **layer A**, in form of half-wave birefringent plate or **layer** with sections positioned in or outside focuses of focusing optical elements, or with sections in form of quarter-wave plates, positioned outside focuses of focusing optical elements. Alternatively, device (2) is made in form of sectioned clearance polymerized planar liquid crystal **layer**, with twist structure, rotation of optical axis of liquid crystal within the thickness of **layer A** by 90 deg. , and sections positioned in or outside focuses of focusing optical elements, or the device (2) is made in form of sectioned clearance achromatic birefringent plate.

An INDEPENDENT CLAIM is also included for liquid crystal indicator element containing **layer** of liquid crystal positioned between first and second plate, with electrodes and **polarizer** as claimed above placed at least on one plate, and at least one **polarizer** containing at least one **layer A**, having at least one **refraction** index increasing with increase of wavelength of **polarized** light, and at least one **layer A** of at least one **polarizer** made in form of elements with differing phase delay value and/or differing direction of **polarization** axis.

USE - Light **polarizer** can be used in lighting fixtures, optical modulators, matrix systems for light modulation, in protection of special value paper and trade marks, in production of **polarization** films, glass (including laminated) for car industry, building and architecture field and advertising industry, and also in production of protective spectacles and shields, etc. Liquid crystal indicator element can be used e.g. in flat **liquid crystal displays**, including projection-type ones.

ADVANTAGE - The use of highly effective light **polarizer** as claimed results in production of color or monochromic liquid crystal indicator elements showing higher luminosity, increased color saturation, good deflection characteristics, and no shadows.

DESCRIPTION OF DRAWING(S) - The drawing shows cross-section of **polarizer** made in form of film or plate, with optically coinciding microlens system and sectioned metallic mirror on its first surface, and the device for separation of non-**polarized** light beams into **polarized** passing and reflected beams (including at least one birefringent **layer** with optical axis directions stable within the thickness of the **layer**) applied onto the second surface of the film.

- linearly **polarized** (within the drawing plane)
- reflected light component 3
  - isotropic **layer** 11
  - linearly **polarized** (perpendicular to the drawing plane)
- passing light component 13
  - non-**polarized** beam (of incident or passing light) 14
  - linearly **polarized** (perpendicular to the drawing plane)
- passing light component 17
  - section of 1/4-wave phase-delaying plate 25
  - metallic mirror 37
  - lens made of isotropic material 38

non-polarized beam (of incident or passing light) 41  
 device for separation of non-polarized light beams into  
 linearly polarized passing and reflected components 42  
 Dwg.15/27

TECH WO 9931535 A1 UPTX: 19991207

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Composition: At least one birefringent anisotropic-absorbing layer is composed of 1) at least one organic salt of dichroic anionic dye of formula (I) (Chromogen)-(XO-M<sup>+</sup>)<sub>n</sub> (I)

Chromogen = chromophore system of dye;

X = CO, OSO<sub>2</sub>, SO<sub>2</sub>, OPO(O-M<sup>+</sup>);

M = organic cation RR<sub>1</sub>NH<sub>2</sub>, RR<sub>1</sub>R<sub>2</sub>NH, RR<sub>1</sub>R<sub>2</sub>R<sub>3</sub>N, RR<sub>1</sub>R<sub>2</sub>R<sub>3</sub>P;

R, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> = CH<sub>3</sub>, ClC<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>5</sub>, C<sub>3</sub>H<sub>7</sub>, C<sub>4</sub>H<sub>9</sub>, C<sub>6</sub>H<sub>5</sub>CH<sub>2</sub>, substituted phenyl or heteroaryl YH(CH<sub>2</sub>CH<sub>2</sub>Y)<sub>m</sub> CH<sub>2</sub>CH<sub>2</sub>, or heteroaromatic cation of N-alkyl-pyridinium, N-alkylquinolinium, N-alkyl-imidazolinium, N-alkyl-thiazolinium;

Y = O, NH;

m = 0-5;

n = 1-7

- or of 2) at least one asymmetric mixed salt of dichroic anionic dye and other cations, of formula (II)

(M<sub>1</sub><sup>+</sup> O-X'-)<sub>m</sub> (M<sub>1</sub><sup>+</sup> O-X'-(CH<sub>2</sub>)<sub>p</sub>-Z-)g (Chromogen) (-Z-(CH<sub>2</sub>)<sub>p</sub>-XO-M<sup>+</sup>)<sub>f</sub> (-XO-M<sup>+</sup>)<sub>n</sub> (II)

Chromogen = as above;

Z = SO<sub>2</sub>NH, SO<sub>2</sub>, CONH, CO, O, S, NH, CH<sub>2</sub>;

X' = X;

X = as above;

M, M<sub>1</sub> = H, inorganic cation NH<sub>4</sub>, Li, Na, K, Cs, Mg, Ca, Ba, Fe, Ni, Co etc., organic cation as above, or heteroaromatic cation as above, and M is different from M<sub>1</sub>;

p = 1-10;

f, g, n, m = 0-9;

n + f = 1-10;

m + g = 1-10

- or of 3) at least one associate of dichroic anionic dye with surface-active cation and/or amphoteric surfactant, of formula (III)

(M<sup>+</sup> O-X'-)<sub>m</sub> (M<sup>+</sup> O-X'-(CH<sub>2</sub>)<sub>p</sub>-Z-)g (Chromogen) (-Z-(CH<sub>2</sub>)<sub>p</sub>-XO-PAV)<sub>f</sub> (-XO-PAV)<sub>n</sub> (III)

Chromogen = as above;

Z = as above;

X', X = as above;

M = inorganic or organic or heteroaromatic cation as above, or K'PAV<sup>+</sup>;

p = 1-10;

f, n = 0-4;

g, m = 0-9;

n + f = 1-4;

m + g = 0-9;

PAV = KPAV<sup>+</sup>, K'PAV<sup>+</sup> (surface-active cations), or AmPAV (amphoteric surfactant)

- or of 4) at least one associate of dichroic cationic dye with surface active anion and/or amphoteric surfactant, of formula (IV)

(M<sup>+</sup> O-X-)<sub>m</sub> (M<sup>+</sup> O-X-(CH<sub>2</sub>)<sub>p</sub>-Z-)g (Chromogen<sup>+</sup>) PAV (IV)

Chromogen = as above;

Z = as above;

X = as above;

M = inorganic or organic or heteroaromatic cation as above, or K'PAV<sup>+</sup> (surface-active cation);

PAV = APAV<sup>-</sup> (surface active anion), AmPAV (amphoteric surfactant);

p = 1-10;

g, m = 0-1;

$m+g = 1$

- or of 5) at least one associate of dichroic acidic dye with surface-active anion and/or amphoteric surfactant of formula (V)  
(Chromogen) - (Z-(CH<sub>2</sub>)<sub>p</sub> -X+ R R<sub>1</sub> R<sub>2</sub> PAV)<sub>n</sub> (V)

Chromogen = as above;

Z = as above;

X = n, p;

R, R<sub>1</sub>, R<sub>2</sub> = alkyl or substituted alkyl of type CH<sub>3</sub>, ClC<sub>2</sub>H<sub>4</sub>, OHC<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>5</sub>, C<sub>3</sub>H<sub>7</sub>;

PAV = APAV- (surface active anion), AmPAV (amphoteric surfactant);

n = 1-4

- or of 6) at least one water non-soluble dichroic dye and/or pigment, containing neither ionic nor hydrophilic groups;

- or of 7) at least one thermotropic liquid crystalline substance of low molecular weight, consisting of dichroic dye or containing liquid crystalline or non-liquid crystalline dye as component, and vitrified by e.g. using UV hardening;

- or of 8) at least one non-liquid crystalline polymeric material with controllable hydrophilic properties, dyed with dichroic dye and/or iodine compounds;

- or of 9) at least one polymeric thermotropic liquid crystalline and/or non-liquid crystalline substance, containing dichroic dyes dissolved in its mass and/or chemically bound with polymeric chain;

- or of 10) at least one dichroic dye, capable to form lyotropic liquid crystalline phase;

- or of 11) at least one dichroic dye of polymeric structure;

- or of 12) at least one water-soluble organic dye, capable of formation of stable lyotropic liquid crystalline phase, of formula (VI)

(Chromogen) (SO<sub>3</sub>M)<sub>n</sub> (VI)

Chromogen = as above;

M = H<sup>+</sup>, inorganic cation;

n = as above

- or of 13) the mixtures of above.

Preferred Dye: At least one dichroic dye or pigment is selected from dyes capable of formation of lyotropic liquid crystalline phase, or capable of formation of stable lyotropic liquid crystalline phase, or from luminescent dyes, or primary dyes, or active, or acidic dyes, or sulfonic polycyclic dyes, or polymethinic, cyanine and hemicyanine dyes, or aryl-carbonium dyes, or heterocyclic derivatives of di- and triaryl methanes, or thiopyranine, acridine, oxazine, triazine, xanthene and azine dyes, or vat dyes, or disperse dyes, or anthraquinone dyes, or indigoid dyes, or mono- and poly- azo-dyes, or perinone dyes, or polycyclic compounds, or heterocyclic antrone derivatives, or metal complex compounds, or aromatic heterocyclic compounds, or mixtures of the above.

Preferred Modifier: At least one of birefringent anisotropic-absorbing layer additionally contains modifier, in form of hydrophilic or hydrophobic polymers of various type, including liquid crystalline and silico-organic, and/or plasticizers and varnishes, including silico-organic and/or nonionic surfactants.

ABEX WO 9931535 A1 UPTX: 19991207

WIDER DISCLOSURE - Alternatively, the polarizer includes device (a) for transforming non-polarized incident light into number of identical light beams, polarizing device (b) for separation of non-polarized light beams into polarized passing and reflected light beams, having different polarizations, and device (c) for changing polarization and direction of reflected light beams. The polarizer is made in form of at least one plate or film, with above devices applied onto it, and device (b) contains at least one layer A, with at least one refraction index increasing with the increase of wavelength of polarized light, or birefringent layer with directions of optical axis stationary within the thickness of layer, or

with directions of optical axis changing within the thickness of the layer according to calculated rule (preferably in form of at least one layer of cholesteric liquid crystal). The device (c) preferably contains sectioned metallic mirror, preferably with quarter-wave plate before it. Device (a) is preferably made in form of microlens or micro-prisms, focusing light beams entering polarizer. Microlens system is preferably made in form of positive cylindrical microlens, completely covering the polarizer surface. Microlens system and optically coordinated sectioned metallic mirror are preferably on the first surface of film or plate, while at least one layer of cholesteric liquid crystal is on the second surface; or microlens system sectioned metallic mirror and quarter-wave plate is on the first surface, and at least one layer A or birefringent layer with stationary directions of optical axis is on the second surface; or sectioned metallic mirror is on the first surface while microlens system, optically coordinated with mirror, and at least one layer of cholesteric liquid crystal are applied, in sequence, onto the second surface; or sectioned metallic mirror and quarter-wave plate are on the first surface, while microlens system and at least one layer A or birefringent layer with stationary directions of optical axis are applied onto second surface. Alternatively, polarizer contains at least two laminated films or plates, with first microlens system applied onto external surface of first plate or film, sectioned metallic mirror (and optional quarter-wave plate) applied onto internal surface of first or second film or plate, and additional second system of microlens, optically coordinated with metallic mirror and with the first microlens system, together with at least one layer of cholesteric liquid crystal (or at least one layer A or birefringent layer with stationary optical axis directions), applied onto external surface of second film or plate.

EXAMPLE - None given.

FS CPI EPI GMPI

FA AB; GI; DCN

MC CPI: A12-L02; A12-L03; E25; L03-G02; L03-G05B

EPI: U14-K01A1C; V07-K03; W03-A08B1

L52 ANSWER 25 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1999-333472 [28] WPIX

DNN N1999-251102

TI Thin film semiconductor device for LCD panel - includes transparent insulating layers based on whose refractive index, optical interference occurs in channel area.

DC P81 U12 U14

PA (TOKE) TOSHIBA KK

CYC 1

PI JP 11121755 A 19990430 (199928)\* 6 H01L029-786

ADT JP 11121755 A JP 1997-283675 19971016

PRAI JP 1997-283675 19971016

IC ICM H01L029-786

ICS G02F001-136

AB JP 11121755 A UPAB: 19990719

NOVELTY - Light radiated on the insulated substrate (38) via transparent foundation insulating layers (34,35) is made to interfere in a channel area based on the difference in refractive index of the insulated substrate. Consequently, the light transmittance is reduced to about short wavelength. DETAILED DESCRIPTION - Source and drain areas (40s,40d) separately formed in silicon layer (40) that is formed on a transparent insulated substrate (38). Gate electrode is formed on a gate insulating film (41) that covers a portion of the silicon layer (40) positioned in the channel area between the source and drain areas.

USE - For impressing drive voltage to pixels in LCD panel.

ADVANTAGE - The thin film semiconductor device reduces optical leak current. DESCRIPTION OF DRAWING(S) - The figure shows the partial sectional view of the structure of LCD panel. (34,35) Transparent foundation insulating layers; (38) Insulated substrate; (40) Silicon layer; (40s,40d) Source and drain areas; (41) Gate insulating film.

Dwg.1/4

FS EPI GMPI

FA AB; GI

MC EPI: U12-B03A; U14-K01A2B

L52 ANSWER 26 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1999-249556 [21] WPIX

DNN N1999-186168

TI **Reflected type polarized light sheet** fixing structure in **liquid crystal display** device - is configured by fixing **reflected type polarized light sheet** to lower substrate via adhesive agent.

DC P81 U14

PA (CITL) CITIZEN WATCH CO LTD

CYC 1

PI JP 11072782 A 19990316 (199921)\* 6 G02F001-1335 <--

ADT JP 11072782 A JP 1997-230969 19970827

PRAI JP 1997-230969 19970827

IC ICM G02F001-1335

AB JP 11072782 A UPAB: 19990806

NOVELTY - The **reflected type polarized light sheet** (3) is fixed to a lower substrate (2) via a UV hardening type adhesive agent (4). A liquid crystal layer (8) is provided between upper and lower substrates (1,2).

USE - For wrist watch, calculator portable apparatus.

ADVANTAGE - Distortion of image due to flapping of **reflected type polarized light sheet** is prevented, thereby improves display quality. Development of **interference fringes** due to adherence of **polarized light sheet** onto glass substrate, is suppressed. DESCRIPTION OF DRAWING(S) - The figure shows structure of LCD device. (1,2) Upper and lower substrates; (3) **Reflected type polarized light sheet**; (4) Adhesive agent; (8) Liquid crystal layer.

Dwg.1/4

FS EPI GMPI

FA AB; GI

MC EPI: U14-K01A1C

L52 ANSWER 27 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1998-469428 [41] WPIX

DNN N1998-365938

TI **Reflective ferroelectric liquid crystal display** - has double **refraction layer** between double **refraction liquid crystal layer** and **light reflecting mirror** or diffuse reflector associated with electrode plate.

DC P81 U14

IN FUENFSCHILLING, J; SCHADT, M; FUNFSCHILLING, J

PA (ROLI-N) ROLIC AG

CYC 29

PI EP 864912 A1 19980916 (199841)\* GE 13 G02F001-141 <--

R: AL AT BE CH DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO  
SE SI

JP 10274767 A 19981013 (199851) 9 G02F001-1335 <--  
 CN 1193126 A 19980916 (199905) G02F001-133 <--  
 SG 66443 A1 19990720 (199936) G02F001-141 <--  
 KR 98080131 A 19981125 (200004) G02F001-13 <--  
 EP 864912 B1 20010912 (200155) GE G02F001-141 <--  
 R: CH DE FR GB IT LI NL  
 DE 59801417 G 20011018 (200169) G02F001-141 <--  
 US 6606134 B1 20030812 (200355) G02F001-133 <--  
 ADT EP 864912 A1 EP 1998-810200 19980310; JP 10274767 A JP 1998-58615  
 19980310; CN 1193126 A CN 1998-106088 19980310; SG 66443 A1 SG 1998-529  
 19980310; KR 98080131 A KR 1998-8096 19980311; EP 864912 B1 EP 1998-810200  
 19980310; DE 59801417 G DE 1998-501417 19980310, EP 1998-810200 19980310;  
 US 6606134 B1 US 1998-36214 19980306  
 FDT DE 59801417 G Based on EP 864912  
 PRAI CH 1997-582 19970311  
 IC ICM G02F001-13; G02F001-133; G02F001-1335;  
 G02F001-141  
 ICS G02F001-136  
 AB EP 864912 A UPAB: 19981014  
 The liquid crystal display has a double  
 refraction liquid crystal layer (3)  
 with an optical axis which can be rotated electro-optically in the display  
 plane, by application of an electrical field between a pair of electrode  
 plates on opposite sides of the liquid crystal layer.  
 A light reflecting mirror (4) or a diffuse  
 reflector is associated with one of the electrode plates, with a further  
 double refraction layer (5) between the mirror or  
 reflector and the liquid crystal layer with an optical path  
 difference of a quarter wavelength of the incident light.  
 USE - For high resolution pixel display.  
 ADVANTAGE - Reduces parallax effect interference.  
 Dwg.2/11  
 FS EPI GMPI  
 FA AB; GI  
 MC EPI: U14-K01A1G; U14-K01A2D  
 L52 ANSWER 28 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 1998-379688 [33] WPIX  
 DNN N1998-296941 DNC C1998-115323  
 TI Cholesteric optical filter manufacture, e.g. for liquid crystals, sensing  
 systems - by forming a layer of cholesteric liquid crystal  
 polymerisable material, irradiating with ultra-violet light, changing a  
 physical condition of the material, and irradiating with a narrower band  
 ultra-violet.  
 DC A89 G06 L03 P81 S02 U11 U14 V07  
 IN ANDERSON, D J; BROWN, R G W; DAVIS, G M; WALSH, K; BLAY, C; SMITH, N  
 PA (SHAF) SHARP KK  
 CYC 26  
 PI GB 2321717 A 19980805 (199833)\* 42 G02F001-1333 <--  
 EP 860718 A2 19980826 (199838) EN G02B005-30  
 R: AL AT BE CH DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO  
 SE SI  
 JP 10260387 A 19980929 (199849) 16 G02F001-13 <--  
 US 6339464 B1 20020115 (200208) G02F001-13 <--  
 US 2002024625 A1 20020228 (200220) G02F001-1337 <--  
 US 6624872 B2 20030923 (200364) G02F001-13 <--  
 ADT GB 2321717 A GB 1997-2077 19970131; EP 860718 A2 EP 1998-300690 19980130;  
 JP 10260387 A JP 1998-15537 19980128; US 6339464 B1 US 1998-14957  
 19980128; US 2002024625 A1 Div ex US 1998-14957 19980128, US 2001-969276  
 20011002; US 6624872 B2 Div ex US 1998-14957 19980128, US 2001-969276

20011002

FDT US 6624872 B2 Div ex US 339464

PRAI GB 1997-2077 19970131

IC ICM G02B005-30; G02F001-13; G02F001-1333;  
G02F001-1337

ICS C09K019-02; G02B005-20; G02B005-26; G02F001-1335

AB GB 2321717 A UPAB: 19980826

Making a single film optical device comprises: (a) forming a **layer** of cholesteric liquid crystal polymerisable or cross-linkable material; (b) establishing a first physical condition of the **layer**; (c) initiating a first polymerisation or cross-linking by irradiation of at least a first region of the **layer** to a first depth; (d) establishing a second physical condition of the **layer**; and (e) initiating a second polymerisation or cross-linking by irradiation of at least the first region by radiation penetrating the whole thickness of the **layer**. Also claimed is a filter with cholesteric reflectors, the above process is repeated for different wavelengths of UV so as to penetrate to different depths from the surface (2) to form infrared reflecting **layer** (17), and red and green reflecting **layers** (18, 19). For normally incident light the **layers** (18, 19) reflect red and green and transmit blue. For off axis illumination red **light** is **reflected** by the **layer** (17) and green **light** is **reflected** by the **layer** (18). The birefringence of the **layers** (17, 18) reverses the direction of circular **polarisation** of the blue **light** which thus passes through the green **layer** (19).

USE - Optical devices and filters used in **liquid crystals, displays, interference filters, colours filters, holography, optical and electronic measurement and sensing systems, suitable for high flux applications.**

ADVANTAGE - Spectral filters which retain their performance over a wider angular range of incidence and emergence are provided. The cholesteric colour filters can be used in systems with a large optical flux, such as projector systems. Because unwanted **light** is **reflected** rather than being absorbed, the filters are subjected to less thermal stress. Improved colour stability and operating life can be achieved.

Dwg.9/16

FS CPI EPI GMPI

FA AB; GI

MC CPI: A09-A02A; A11-C02B; A12-L03B; A12-L03D; G06-D; G06-D06; G06-E;  
G06-F03C; G06-G18; L03-D01D; L03-G02; L03-G05A  
EPI: S02-K03B; U11-C18D; U14-K01A1C; V07-M

L52 ANSWER 29 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1997-406914 [38] WPIX

CR 1997-406936 [38]

DNN N1997-338336

TI LCD device for OA appts - has phase lattices arranged spatially such that each lattice radiates **interference** light in same direction.

DC P81 U14

IN HAYAMA, H; SUMIYOSHI, K

PA (NIDE) NEC CORP; (NIDE) NIPPON ELECTRIC CO; (NIDE) NIPPON ELECTRIC CO;  
(TOKE) TOSHIBA KK

CYC 4

PI	JP 09179111	A	19970711 (199738)*	8	G02F001-1335	<--
	KR 97048784	A	19970729 (199908)		G02F001-1335	<--
	TW 399159	A	20000721 (200111)		G02F001-133	<--
	KR 247413	B1	20000315 (200122)		G02F001-1335	<--

US 6278506 B1 20010821 (200150) G02F001-1333 <--  
 ADT JP 09179111 A JP 1995-332872 19951221; KR 97048784 A KR 1996-69231  
 19961220; TW 399159 A TW 1996-115810 19961221; KR 247413 B1 KR 1996-69231  
 19961220; US 6278506 B1 US 1996-767870 19961217  
 PRAI JP 1995-332872 19951221  
 IC ICM G02F001-133; G02F001-1333; G02F001-1335  
 ICS G02F001-13; G02F001-1337; G02F001-136  
 AB JP 09179111 A UPAB: 20010905  
 The device has a display medium (3) in which, two phase lattices (1,2) of  
 a multi-layer polymer structure are arranged spatially. Light  
 (4) is incident on the medium from a laser and an electric field may be  
 applied individually to each structure via an electrode.  
 The lattices are arranged such that the **interference** light  
 from each lattice is radiated in the same direction. A colour display is  
 obtained by changing the **reflecting wavelength** of each  
 multilayer structure.  
 ADVANTAGE - Offers colour display. Offers high **reflecting**  
 rate. Provides **lightweight** device. Enables performing  
**reflecting** display without using **polarizing** plate.  
 Dwg.1/13  
 FSI EPI GMPI  
 FA AB; GI  
 MC EPI: U14-K01A; U14-K01A1C

L52 ANSWER 30 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 1997-102005 [10] WPIX  
 DNN N1997-084351  
 TI **Liquid crystal display** appts. with improved  
 observability characteristic - has anti-reflection film placed on both  
 surfaces of protection plate, anti-reflection film being of **layer**  
 structure one **layer** promoting optical **interference** to  
 decrease **reflected light** brightness and having  
 predetermined pitch irregularity.

DC P81 U14  
 IN KATANOSAKA, A; KUREMATSU, K; MATOBA, N; SATOH, T; TAKABAYASHI, H;  
 TAKAHASHI, M  
 PA (CANO) CANON KK  
 CYC 10  
 PI EP 756191 A2 19970129 (199710)\* EN 13 G02F001-1335 <--  
 R: DE ES FR GB IT NL SE  
 JP 09101518 A 19970415 (199725) 10 G02F001-1335 <--  
 KR 97007439 A 19970221 (199811) G02F001-1335 <--  
 US 5847795 A 19981208 (199905) G02F001-1335 <--  
 KR 267522 B1 20001016 (200134) G02F001-1335 <--  
 JP 2002040210 A 20020206 (200214) 6 G02B001-11  
 ADT EP 756191 A2 EP 1996-112142 19960726; JP 09101518 A JP 1996-199324  
 19960729; KR 97007439 A KR 1996-30813 19960727; US 5847795 A US  
 1996-687186 19960725; KR 267522 B1 KR 1996-30813 19960727; JP 2002040210 A  
 Div ex JP 1996-199324 19960729, JP 2001-110456 19960729  
 PRAI JP 1995-198820 19950803; JP 1995-192303 19950727  
 IC ICM G02B001-11; G02F001-1335  
 ICS B32B007-02; G02B005-02; G02F001-141; G09F009-00; H01J029-88  
 AB EP 756191 A UPAB: 19970619  
 The LCD appts. has a transmission type **liquid**  
**crystal** panel (2) for data **display** with a pair of  
 oppositely disposed substrates (6a) with liquid crystal (11b) between  
 them. A sheet of transparent protection plate (4) is placed opposite to  
 and with a given gap from a display surface of the panel to protect the  
 panel.  
 A **polariser** sheet (10a) selectively **transmits**

light with a plane of polarisation in a given direction placed on the display surface of the LCD panel. An anti-reflection film (11) is placed on at least the front surface of the protection plate, and on the opposite protection plate surface between the polariser and the protection plate. The anti-reflection film is of a layer structure with at least one layer promoting optical interference to decrease reflected light brightness. Surface unevenness of the anti-reflection film is provided at a prescribed pitch.

ADVANTAGE - By setting surface unevenness pitch at 20  $\mu$ m and at most half of pixel arrangement pitch of panel, occurrence of optical irregularity is prevented and improved anti-glare effect is provided.

Dwg.3/8

FS EPI GMPI  
FA AB; GI  
MC EPI: U14-K01A1C

L52 ANSWER 31 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1994-210170 [26] WPIX

DNN N1994-165524

TI **Liquid crystal display** panel for computer or video equipment - has intermediate layers placed between layers of divergent refractive index to reduce steps in refractive index to 0.2 or less..

DC P81 T04 U14 W03

IN SATANI, H; TAKUBO, Y; YAMAGISHI, N; YAMAMOTO, M

PA (MATU) MATSUSHITA ELECTRIC IND CO INC; (MATU) MATSUSHITA DENKI SANGYO KK  
CYC 4

PI EP 604903 A2 19940706 (199426)\* EN 23 G02F001-1335 <--

R: DE FR GB

JP 06194639 A 19940715 (199433) 10 G02F001-1333 <--

EP 604903 A3 19950412 (199544) G02F001-1335 <--

ADT EP 604903 A2 EP 1993-120769 19931223; JP 06194639 A JP 1992-345927

19921225; EP 604903 A3 EP 1993-120769 19931223

PRAI JP 1992-345927 19921225

REP No-SR.Pub; 3.Jnl.Ref; JP 03142417; JP 03209223; JP 53089450; US 4895432

IC ICM G02F001-1333; G02F001-1335

AB EP 604903 A UPAB: 19940817

A **liquid crystal display** panel comprises

substrates (1,2), a **liquid crystal layer**

(3), electrodes, (4,5) and colour filter (8). At each interface between

adjacent layers, for example between a top substrate (1) and a

colour filter (8), or between a colour filter (8) and an electrode film

(4) or the like, the difference of the index of refraction is

set to be 0.2 or less. An intermediate layer (12,13) may be

inserted between two adjacent layers where the difference of the

index of refraction is larger than 0.2.

Alternatively, the optical path length of a layer can be

chosen to have a value of about half the wavelength of green light, thus

reversing the phase of light and diminishing reflections

ADVANTAGE - Improves quality of display by eliminating interference; yield of liquid crystal display production can be increased.

Dwg.1/13

FS EPI GMPI  
FA AB; GI  
MC EPI: T04-H03C2; U14-K01A1; U14-K01A1C; W03-A08B

L52 ANSWER 32 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1991-188231 [26] WPIX  
DNN N1991-144116 DNC C1991-081436  
TI Substrate for **liquid crystal display** device -  
with colour **display** elements, formed by oblique deposition of  
double **refraction** substance, having different phase differences.  
DC L03 P81 U14  
PA (NITL) NITTO DENKO CORP  
CYC 1  
PI JP 03114023 A 19910515 (199126)\*  
ADT JP 03114023 A JP 1989-253027 19890928  
PRAI JP 1989-253027 19890928  
IC **G02F001-13**  
AB JP 03114023 A UPAB: 19930928  
Display substrate has colour display picture elements with different phase  
differences on one surface of a transparent substrate. The elements are  
formed by oblique deposition of a double **refraction** substance.  
USE/ADVANTAGE - The substrate having oblique deposition  
**layers** with different phase differences on the transparent  
substrate allows optical compensation of the STN liq crystal, and colour  
filter function of **interference** colour formation under  
**light transmitting** condition. The phase difference of  
each picture element can be well controlled by the several steps of the  
oblique deposition process of a double **refraction** substance.  
Accordingly, a thin and light colour STN **liq crystal**  
**display** element of low cost, with improved transmissivity can be  
obtained.  
1/2  
FS CPI EPI GMPI  
FA AB  
MC CPI: L03-G05B  
EPI: U14-K01A1; U14-K01A2  
L52 ANSWER 33 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 1990-165458 [22] WPIX  
DNN N1990-128442  
TI Multi-**layered**-type liquid display driving method - providing  
display of red, green and blue light by selective activation of cell  
**layers**.  
DC P81 P85 U14  
IN HATANO, A; ISHII, Y  
PA (SHAF) SHARP KK  
CYC 4  
PI EP 370773 A 19900530 (199022)\*  
R: DE FR GB  
US 5090794 A 19920225 (199211) 16  
EP 370773 B1 19960117 (199608) EN 23 G02F001-1347 <--  
R: DE FR GB  
DE 68925468 E 19960229 (199614) G02F001-1347 <--  
ADT EP 370773 A EP 1989-312086 19891121; US 5090794 A US 1989-439876 19891121;  
EP 370773 B1 EP 1989-312086 19891121; DE 68925468 E DE 1989-625468  
19891121, EP 1989-312086 19891121  
FDT DE 68925468 E Based on EP 370773  
PRAI JP 1988-294373 19881121  
REP 3.Jnl.Ref; A3...9045; EP 246842; EP 284372; JP 01124823; NoSR.Pub; WO  
8903542  
IC **G02F001-13**; G09G003-36  
ICM **G02F001-1347**  
ICS **G02F001-13**; G09G003-36  
AB EP 370773 A UPAB: 19930928  
The method drives a multilayer type **liquid crystal**

display consisting of a stack of layers (1,2) with each layer (1,2) containing twisted nematic liquid crystal molecules (6a,6b) twisted between transparent substrates (3a,3b,3c) for relatively large birefringence. The light transmittance of each cell layer (1,2) changes in response to an applied voltage. This method is characterised in that the voltage applied to the respective cell layers (1,2) is chosen such that the cell layers (1,2) pass a predetermined colour light in combination of the light transmittances of individual cell layers (1,2). These cells (1,2) are driven in order to display an image of the predetermined colour light on the liquid crystal display.

1/6

FS EPI GMPI  
FA AB; GI  
MC EPI: U14-K01A; U14-K01A2

L52 ANSWER 34 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1988-258852 [37] WPIX

DNN N1988-196482 DNC C1988-115433

TI **Liquid crystal colour display cell** - includes transparent electrode plates sandwiching cell medium containing dichroic UV-absorbing material with UV phosphor layer.

DC L03 P81 U14

IN BREDELS, P A; VANSPRANG, H A

PA (PHIG) PHILIPS GLOEILAMPENFAB NV

CYC 7

PI EP 282109 A 19880914 (198837)\* EN 10

R: CH DE FR GB LI NL

US 4830469 A 19890516 (198923) 7

ADT EP 282109 A EP 1988-200226 19880209; US 4830469 A US 1988-149043 19880127

PRAI NL 1987-347 19870213

REP FR 2557339; GB 2154355

IC C09K019-24; G02F001-13

AB EP 282109 A UPAB: 19930923

**Liquid crystal colour display cell** comprises two transparent electrode plates sandwiching a liquid crystal medium having a 180-360 deg. twist across the cell thickness, one of the electrodes having a phosphor which emits coloured light under UV, the cell medium containing a dichroic UV-absorber and the cell containing at most one polariser.

Pref. the UV absorber absorbs at 360-370 nm; the UV absorber and the liquid crystal material may be the same material or different materials.

ADVANTAGE - Cell having a 180-360 deg. twist can be used as a colour cell having a steep transmission-voltage characteristic and sharp contrast and high brightness. The phosphor is located on the inner electrode surface facing the cell medium. An **interference** filter is located between the electrode and the phosphor which passes UV and **reflects** the excitation light produced by the phosphor.

Method of displaying a coloured image using the above cell is claimed; UV light is absorbed by those parts of the medium corresponding to locations where the electrodes are non-excited and is passed to the phosphor layer by those parts where the medium corresponds to excited electrode areas. The phosphor layer is pref. an RGB dot matrix (not claimed).

1/2

FS CPI EPI GMPI  
FA AB; GI  
MC CPI: L03-G05A  
EPI: U14-K01A1

L52 ANSWER 35 OF 35 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 1982-K8540E [33] WPIX  
TI Double-layered twisted nematic LCD device - has  
polariser for light-transmitted through appts.  
to allow passage of elliptically polarised light only and thus  
avoid colouration.  
DC P81 U14  
IN FUNADA, F; MATSUURA, M; WADA, T  
PA (SHAF) SHARP KK  
CYC 3  
PI GB 2092769 A 19820818 (198233)\* 11  
DE 3148447 A 19821021 (198243)  
US 4443065 A 19840417 (198418)  
GB 2092769 B 19841219 (198451)  
DE 3148447 C 19890713 (198928)  
ADT GB 2092769 A GB 1981-36949 19811208; DE 3148447 A DE 1981-3148447  
19811208; US 4443065 A US 1981-327229 19811203  
PRAI JP 1980-174406 19801209; JP 1981-13234 19810130  
IC G02F001-13  
AB GB 2092769 A UPAB: 19930915  
The appts. has two layers of nematic liquid crystal, one  
layer being superposed on the other. The molecules of liquid  
crystal in each layer are twisted about the respective  
longitudinal axes of the molecules, the direction of twist of all the  
molecules in each layer being the same. Electrodes apply a  
voltage across one of the layers for controlling the orientation  
of the molecules in the layer. The light  
transmitted through the appts. is polarised. An  
electrical power supply provides a voltage to one of the first and second  
layers for controlling the orientation of the molecules of the  
liquid crystal in the layer. The layers serving as a  
compensator, and a polarising device is used for visibly  
enhancing the orientation of the molecules of the liquid crystal in the  
first layer when the voltage is applied to it.  
2/10  
FS EPI GMPI  
FA AB  
MC EPI: U14-K

=> => FILE HCAPLUS

FILE 'HCAPLUS' ENTERED AT 16:17:12 ON 14 SEP 2005

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FILE LAST UPDATED: 13 Sep 2005 (20050913/ED)

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=> D QUE L32

L3 164589 SEA FILE=HCAPLUS ABB=ON LIQ? (2A)CRYST?  
L4 58947 SEA FILE=HCAPLUS ABB=ON L3 (6A)DISPLAY?  
L5 19635 SEA FILE=HCAPLUS ABB=ON L4 AND LAYER?  
L6 2768 SEA FILE=HCAPLUS ABB=ON INTERFERENCE (3A) (MAX? OR MIN?)  
L7 4 SEA FILE=HCAPLUS ABB=ON L5 AND L6  
L8 65257 SEA FILE=HCAPLUS ABB=ON (WAVE? OR LIGHT?) (3A) (REFLECT? OR  
TRANSMIT?)  
L9 1816 SEA FILE=HCAPLUS ABB=ON L5 AND L8  
L10 45 SEA FILE=HCAPLUS ABB=ON L9 AND INTERFERENCE  
L11 11076 SEA FILE=HCAPLUS ABB=ON (MAX? OR MIN?) (3A) (REFLECT? OR  
TRANSMI?)  
L12 96 SEA FILE=HCAPLUS ABB=ON L5 AND L11  
L13 1 SEA FILE=HCAPLUS ABB=ON L12 AND INTERFERENCE  
L14 141 SEA FILE=HCAPLUS ABB=ON L10 OR L12  
L15 2 SEA FILE=HCAPLUS ABB=ON L14 AND FRONT AND (BACK OR REAR)  
L16 16 SEA FILE=HCAPLUS ABB=ON L14 AND (RI OR REFRACT?)  
L17 0 SEA FILE=HCAPLUS ABB=ON L14 AND OPTIC? (2A)THICK?  
L18 20 SEA FILE=HCAPLUS ABB=ON L7 OR L13 OR L15 OR L16 OR L17  
L19 35 SEA FILE=HCAPLUS ABB=ON L9 AND L12  
L20 50 SEA FILE=HCAPLUS ABB=ON L18 OR L19  
L23 25 SEA FILE=HCAPLUS ABB=ON L20 AND PHOTOCHEM?/SC, SX  
L24 22 SEA FILE=HCAPLUS ABB=ON L14 AND PANEL?  
L26 3 SEA FILE=HCAPLUS ABB=ON L24 AND (FRONT OR REAR OR BACK) (3A)PAN  
EL?  
L27 28 SEA FILE=HCAPLUS ABB=ON L15 OR L26 OR L23  
L29 6584 SEA FILE=HCAPLUS ABB=ON (MIN? OR MAX?) (5A)DIFFRACT?  
L30 0 SEA FILE=HCAPLUS ABB=ON L14 AND L29  
L31 1 SEA FILE=HCAPLUS ABB=ON L29 AND L5  
L32 29 SEA FILE=HCAPLUS ABB=ON L27 OR L30 OR L31

=> FILE JICST

FILE 'JICST-EPLUS' ENTERED AT 16:17:24 ON 14 SEP 2005

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FILE COVERS 1985 TO 13 SEP 2005 (20050913/ED)

THE JICST-EPLUS FILE HAS BEEN RELOADED TO REFLECT THE 1999 CONTROLLED  
TERM (/CT) THESAURUS RELOAD.

=> D QUE L60

L3 164589 SEA FILE=HCAPLUS ABB=ON LIQ? (2A)CRYST?  
L4 58947 SEA FILE=HCAPLUS ABB=ON L3 (6A)DISPLAY?  
L33 27997 SEA FILE=WPIX ABB=ON L4 AND LAYER?  
L34 3620 SEA FILE=WPIX ABB=ON INTERFERENCE (3A) (MAX? OR MIN?)  
L35 160991 SEA FILE=WPIX ABB=ON (WAVE? OR LIGHT?) (3A) (REFLECT? OR  
TRANSMIT?)  
L36 13135 SEA FILE=WPIX ABB=ON (MAX? OR MIN?) (3A) (REFLECT? OR TRANSMI?)  
L37 1164 SEA FILE=WPIX ABB=ON (MIN? OR MAX?) (5A)DIFFRACT?  
L38 3296 SEA FILE=WPIX ABB=ON L33 AND ((L34 OR L35 OR L36 OR L37))  
L46 74146 SEA FILE=WPIX ABB=ON LCD  
L47 16440 SEA FILE=WPIX ABB=ON L46 AND LAYER?

L48 1757 SEA FILE=WPIX ABB=ON L47 AND ((L34 OR L35 OR L36 OR L37 OR L38))  
 L49 60 SEA FILE=WPIX ABB=ON L48 AND INTERFERENCE  
 L53 1 SEA FILE=JICST-EPLUS ABB=ON L49 AND (POLARI? OR RI OR REFRACT?)  
 L54 59 SEA FILE=JICST-EPLUS ABB=ON L33 AND ((L34 OR L35 OR L36 OR L37))  
 L55 3 SEA FILE=JICST-EPLUS ABB=ON L54 AND INTERFERENCE  
 L57 28 SEA FILE=JICST-EPLUS ABB=ON L54 AND (POLARI? OR RI OR REFRACT? OR (FRONT AND (BACK OR REAR)))  
 L58 30 SEA FILE=JICST-EPLUS ABB=ON L53 OR L55 OR L57  
 L59 10214 SEA FILE=JICST-EPLUS ABB=ON LIQUID CRYSTAL DISPLAY+NT/CT  
 L60 28 SEA FILE=JICST-EPLUS ABB=ON L58 AND L59

=> FILE COMPENDEX

FILE 'COMPENDEX' ENTERED AT 16:17:45 ON 14 SEP 2005

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FILE LAST UPDATED: 12 SEP 2005 <20050912/UP>

FILE COVERS 1970 TO DATE.

<<< SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN THE BASIC INDEX >>>

<<< SOME LITTLE CHANGES IN TEXT OF CLASSIFICATION AS OF JUNE 13, 2005 SEE HELP CLA >>>

=> D QUE L72

L3 164589 SEA FILE=HCAPLUS ABB=ON LIQ? (2A) CRYST?  
 L4 58947 SEA FILE=HCAPLUS ABB=ON L3 (6A) DISPLAY?  
 L11 11076 SEA FILE=HCAPLUS ABB=ON (MAX? OR MIN?) (3A) (REFLECT? OR TRANSMI?)  
 L33 27997 SEA FILE=WPIX ABB=ON L4 AND LAYER?  
 L34 3620 SEA FILE=WPIX ABB=ON INTERFERENCE (3A) (MAX? OR MIN?)  
 L35 160991 SEA FILE=WPIX ABB=ON (WAVE? OR LIGHT?) (3A) (REFLECT? OR TRANSMIT?)  
 L36 13135 SEA FILE=WPIX ABB=ON (MAX? OR MIN?) (3A) (REFLECT? OR TRANSMI?)  
 L37 1164 SEA FILE=WPIX ABB=ON (MIN? OR MAX?) (5A) DIFFRACT?  
 L38 3296 SEA FILE=WPIX ABB=ON L33 AND ((L34 OR L35 OR L36 OR L37))  
 L46 74146 SEA FILE=WPIX ABB=ON LCD  
 L47 16440 SEA FILE=WPIX ABB=ON L46 AND LAYER?  
 L48 1757 SEA FILE=WPIX ABB=ON L47 AND ((L34 OR L35 OR L36 OR L37 OR L38))  
 L49 60 SEA FILE=WPIX ABB=ON L48 AND INTERFERENCE  
 L53 1 SEA FILE=JICST-EPLUS ABB=ON L49 AND (POLARI? OR RI OR REFRACT?)  
 L54 59 SEA FILE=JICST-EPLUS ABB=ON L33 AND ((L34 OR L35 OR L36 OR L37))  
 L55 3 SEA FILE=JICST-EPLUS ABB=ON L54 AND INTERFERENCE  
 L57 28 SEA FILE=JICST-EPLUS ABB=ON L54 AND (POLARI? OR RI OR REFRACT? OR (FRONT AND (BACK OR REAR)))  
 L61 41 SEA FILE=COMPENDEX ABB=ON L53 OR L55 OR L57  
 L62 6 SEA FILE=COMPENDEX ABB=ON L61 AND PANEL?  
 L64 2024 SEA FILE=COMPENDEX ABB=ON INTERFERENCE (3A) (MAX? OR MIN?)  
 L65 0 SEA FILE=COMPENDEX ABB=ON L61 AND L64  
 L66 2 SEA FILE=COMPENDEX ABB=ON L61 AND L11

L67 20 SEA FILE=COMPENDEX ABB=ON L61 AND (BRIGHT? OR CONTRAST?)  
 L68 22 SEA FILE=COMPENDEX ABB=ON L62 OR (L65 OR L66 OR L67)  
 L69 1 SEA FILE=COMPENDEX ABB=ON L61 AND OPTIC? (2A) THICK?  
 L72 21 SEA FILE=INSPEC ABB=ON L68 OR L69

=> FILE INSPEC

FILE 'INSPEC' ENTERED AT 16:17:57 ON 14 SEP 2005

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 FILE COVERS 1969 TO DATE.

<<< SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN  
 THE BASIC INDEX >>>

=> D QUE L72

L3 164589 SEA FILE=HCAPLUS ABB=ON LIQ? (2A) CRYST?  
 L4 58947 SEA FILE=HCAPLUS ABB=ON L3 (6A) DISPLAY?  
 L11 11076 SEA FILE=HCAPLUS ABB=ON (MAX? OR MIN?) (3A) (REFLECT? OR  
 TRANSMI?)  
 L33 27997 SEA FILE=WPIX ABB=ON L4 AND LAYER?  
 L34 3620 SEA FILE=WPIX ABB=ON INTERFERENCE (3A) (MAX? OR MIN?)  
 L35 160991 SEA FILE=WPIX ABB=ON (WAVE? OR LIGHT?) (3A) (REFLECT? OR  
 TRANSMIT?)  
 L36 13135 SEA FILE=WPIX ABB=ON (MAX? OR MIN?) (3A) (REFLECT? OR TRANSMI?)  
 L37 1164 SEA FILE=WPIX ABB=ON (MIN? OR MAX?) (5A) DIFFRACT?  
 L38 3296 SEA FILE=WPIX ABB=ON L33 AND ((L34 OR L35 OR L36 OR L37))  
 L46 74146 SEA FILE=WPIX ABB=ON LCD  
 L47 16440 SEA FILE=WPIX ABB=ON L46 AND LAYER?  
 L48 1757 SEA FILE=WPIX ABB=ON L47 AND ((L34 OR L35 OR L36 OR L37 OR  
 L38))  
 L49 60 SEA FILE=WPIX ABB=ON L48 AND INTERFERENCE  
 L53 1 SEA FILE=JICST-EPLUS ABB=ON L49 AND (POLARI? OR RI OR  
 REFRACT?)  
 L54 59 SEA FILE=JICST-EPLUS ABB=ON L33 AND ((L34 OR L35 OR L36 OR  
 L37))  
 L55 3 SEA FILE=JICST-EPLUS ABB=ON L54 AND INTERFERENCE  
 L57 28 SEA FILE=JICST-EPLUS ABB=ON L54 AND (POLARI? OR RI OR  
 REFRACT? OR (FRONT AND (BACK OR REAR)))  
 L61 41 SEA FILE=COMPENDEX ABB=ON L53 OR L55 OR L57  
 L62 6 SEA FILE=COMPENDEX ABB=ON L61 AND PANEL?  
 L64 2024 SEA FILE=COMPENDEX ABB=ON INTERFERENCE (3A) (MAX? OR MIN?)  
 L65 0 SEA FILE=COMPENDEX ABB=ON L61 AND L64  
 L66 2 SEA FILE=COMPENDEX ABB=ON L61 AND L11  
 L67 20 SEA FILE=COMPENDEX ABB=ON L61 AND (BRIGHT? OR CONTRAST?)  
 L68 22 SEA FILE=COMPENDEX ABB=ON L62 OR (L65 OR L66 OR L67)  
 L69 1 SEA FILE=COMPENDEX ABB=ON L61 AND OPTIC? (2A) THICK?  
 L72 21 SEA FILE=INSPEC ABB=ON L68 OR L69

=> DUP REM L32 L60 L71 L72

FILE 'HCAPLUS' ENTERED AT 16:18:22 ON 14 SEP 2005

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PROCESSING COMPLETED FOR L32

PROCESSING COMPLETED FOR L60

PROCESSING COMPLETED FOR L71

PROCESSING COMPLETED FOR L72

L75 96 DUP REM L32 L60 L71 L72 (4 DUPLICATES REMOVED)

=> D L75 ALL 1-96

L75 ANSWER 1 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN

AN 2005(34):5241 COMPENDEX

TI Proceedings of SPIE - Projection Displays XI.

MT Projection Displays XI.

MO SPIE

ML San Jose, CA, United States

MD 25 Jan 2005-27 Jan 2005

SO Proceedings of SPIE - The International Society for Optical Engineering v  
5740 2005. 162p

Projection Displays XI

CODEN: PSISDG ISSN: 0277-786X

PY 2005

MN 65413

DT Conference Proceedings

TC Theoretical

LA English

AB The proceedings contain 17 papers from the Proceedings of SPIE -  
Projection Displays XI. The topics discussed include: advantages of using  
high-pressure short-arc xenon lamps for display systems; blue and green  
optically pumped semiconductor lasers for display; dual paraboloid  
**reflector** and **light** pipe based systems for projection  
displays; electron-beam-pumped VCSEL light source for projection  
**display**; ultraviolet stability of **liquid crystal**  
alignment **layers** and mixtures; a projection system composed of  
three pieces of DLP **panels**; measuring the effects of display  
hardware on video motion; and comparing methodologies for determining  
resolution from **contrast** in projection display systems. (Edited  
abstract)

CC 742.2 Photographic Equipment; 741.3 Optical Devices and Systems; 714.2  
Semiconductor Devices and Integrated Circuits; 707.2 Electric Lamps;  
744.4.1 Semiconductor Lasers; 722.2 Computer Peripheral Equipment

CT \*Projection systems; **Display devices**; Pulsed laser deposition;  
Passivation; Television systems; Light **polarization**; Optical  
pumping; Liquid crystals; Optical resolving power; Light emitting diodes;  
Arc lamps; **Liquid crystal displays**; Semiconductor lasers

ST Optical power; Color management systems; Transmittance; Projection  
displays; Color separation; Metamerism; UHP lamps; Xenon lamps; Micro  
displays; EiRev

L75 ANSWER 2 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2005:98268 HCAPLUS

DN 142:186245

ED Entered STN: 04 Feb 2005  
 TI Antireflection film equipped transparent plate for **liquid crystal display**  
 IN Komura, Susumu; Sakurai, Akinori; Nagano, Yutaka  
 PA Asahi Techno Glass Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G02B001-11  
 ICS G02F001-13; G02F001-1335  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74

## FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005031297	A2	20050203	JP 2003-195112	20030710
PRAI JP 2003-195112		20030710		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005031297	ICM	G02B001-11
	ICS	G02F001-13; G02F001-1335
JP 2005031297	FTERM	2H088/EA12; 2H088/EA14; 2H088/HA01; 2H088/HA02; 2H088/HA13; 2H088/HA21; 2H088/HA24; 2H088/HA28; 2H088/MA20; 2H091/FA05X; 2H091/FA05Z; 2H091/FA14Z; 2H091/FA26X; 2H091/FA26Z; 2H091/FA37Z; 2H091/FA41Z; 2H091/GA01; 2H091/GA02; 2H091/KA01; 2H091/LA04; 2H091/LA30; 2K009/AA09; 2K009/BB02; 2K009/CC03; 2K009/CC06; 2K009/DD03

AB The invention relates to a transparent plate preventing dusts from attaching to the light incident surface of a projection-type **liquid crystal display**, comprising an antireflection multilayer film that is composed of a high n layer alternately stacked with a low n layer, thus the antireflection multilayer film has  $\leq 0.5\%$  reflectivity in 450-650 nm, and is designed to have the **maximum reflectivity** for UV light in  $\leq 350$  nm. The high n material may be selected from TiO<sub>2</sub> and Nb<sub>2</sub>O<sub>5</sub>, and the low n material from SiO<sub>2</sub> and MgF<sub>2</sub>.

ST antireflection film **liquid crystal display**

IT Antireflective films

(antireflection film equipped transparent plate for **liquid crystal display**)

IT **Liquid crystal displays**

(projection-type; antireflection film equipped transparent plate for **liquid crystal display**)

IT 1313-96-8, Niobium oxide (Nb<sub>2</sub>O<sub>5</sub>) 7631-86-9, Silica, uses 7783-40-6, Magnesium fluoride (MgF<sub>2</sub>) 13463-67-7, Titanium oxide (TiO<sub>2</sub>), uses RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(antireflection film equipped transparent plate for **liquid crystal display**)

L75 ANSWER 3 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:551062 HCAPLUS

DN 141:96833

ED Entered STN: 09 Jul 2004

TI Transparent conductive laminate, touch panel and **liquid crystal display** unit with touch panel

IN Mikoshiba, Hitoshi; Ito, Haruhiko; Shiroishi, Isao  
 PA Teijin Limited, Japan  
 SO PCT Int. Appl., 43 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 IC ICM G02B005-30  
 ICS G02F001-1336; G06F003-033  
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 76

## FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004057381	A1	20040708	WO 2003-JP16240	20031218
W: CN, JP, KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
PRAI JP 2002-369580	A	20021220		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2004057381	ICM	G02B005-30
	ICS	G02F001-1336; G06F003-033
WO 2004057381	ECLA	G02F001/133U
AB	The invention relates to a transparent conductive laminate comprising a film of polymer having a photoelastic constant of up to 70 + 10-12 Pa-1, a light scattering <b>layer</b> formed on one surface of the film and having a haze value ranging from 0.2 to 1.4 %, and a transparent conductive <b>layer</b> formed on the other surface, the laminate giving a phase difference of $\lambda/4$ as a whole. By using such a laminate, a touch panel having a <b>min. reflection light</b> , and being free from discoloring, hence excellent in visibility, easy to use in outdoors and high in reliability, and a <b>liquid crystal display</b> unit using the panel can be provided.	
ST	transparent conductive film touch panel <b>liq crystal display</b>	
IT	Transparent films (elec. conductive; transparent conductive film touch panel for <b>liquid crystal display</b> )	
IT	Electric conductors (films, transparent; transparent conductive film touch panel for <b>liquid crystal display</b> )	
IT	<b>Liquid crystal displays</b> (transparent conductive film touch panel for <b>liquid crystal display</b> )	
IT	Electrodes (transparent; transparent conductive film touch panel for <b>liq crystal display</b> )	

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE

- (1) Kaneka Corp; JP 2000112663 A 2000 HCAPLUS
- (2) Teijin Ltd; JP 2000301648 A 2000 HCAPLUS
- (3) Teijin Ltd; EP 1197768 A1 2002 HCAPLUS
- (4) Teijin Ltd; JP 200214234 A 2002
- (5) Toyobo Co Ltd; JP 05-50561 A 1993 HCAPLUS

L75 ANSWER 4 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2004:534418 HCAPLUS

DN 141:79529  
 ED Entered STN: 02 Jul 2004  
 TI Design and fabrication of a **liquid crystal display** with an anisotropically reflecting layer  
 IN Takahashi, Satoru  
 PA Koninklijke Philips Electronics N.V., Neth.  
 SO PCT Int. Appl., 28 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM G02F001-1335  
 ICS G02B005-02  
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and Other Reprographic Processes)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004055582	A1	20040701	WO 2003-IB5955	20031211
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2004198606	A2	20040715	JP 2002-365149	20021217
PRAI JP 2002-365149	A	20021217		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2004055582	ICM	G02F001-1335
	ICS	G02B005-02
WO 2004055582	ECLA	G02F001/1335D; G02F001/1335R
JP 2004198606	FTERM	2H042/BA03; 2H042/BA14; 2H042/BA15; 2H042/BA20; 2H042/DA02; 2H042/DA04; 2H042/DA12; 2H042/DB00; 2H042/DC02; 2H042/DC08; 2H042/DD00; 2H042/DE04; 2H091/FA16Y; 2H091/FC01; 2H091/FD04; 2H091/FD07; 2H091/GA06; 2H091/GA13; 2H091/LA16

AB A **liquid crystal display** is described that has improved image contrast and contains a diffusive reflecting layer having diffused **reflected light** distribution with a directivity. Thus, the **liquid crystal display** device comprises an optically diffusively **reflecting layer** arranged to **maximize** utilization of incident light. The reflecting layer contains a thin metallic film with projections each having an unsym. cross section to centralize **reflected light** in a specific azimuth direction (y). The range of viewing angles ( $\theta_{x-z}$ ,  $\theta_{y-z}$ ) into which a substantial portion of the incident light is **reflected** is broader in the specific azimuth direction (y) than in another direction (x). The director of liquid crystal mols. initially lies in a plane (y-z) parallel to the specific azimuth direction (y) to achieve retardation self-compensation.

ST **liq crystal display** anisotropically reflecting layer directivity

IT **Liquid crystal displays**  
Optical reflectors

(design and fabrication of **liquid crystal display** that has improved image contrast and contains anisotropically reflecting **layer**)

IT Films

(reflective; design and fabrication of **liquid crystal display** that has improved image contrast and contains anisotropically reflecting **layer**)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Sharp Kk; EP 0495679 A 1992
- (2) Sharp Kk; EP 0780721 A 1997 HCAPLUS
- (3) Wei-Chih, C; US 6163405 A 2000 HCAPLUS

L75 ANSWER 5 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:143388 HCAPLUS

DN 140:190118

ED Entered STN: 22 Feb 2004

TI A **liquid crystal display** capable to minimizegray inversion containing panel with light diffraction **layer**

IN Yang, Young-chol; Shin, Kyong-ju; Kim, Tae-hwan; Kim, Sang-il

PA Samsung Electronics Co., Ltd., S. Korea

SO PCT Int. Appl., 23 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM G02F001-1335

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004015487	A1	20040219	WO 2002-KR1742	20020917
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI KR 2002-46816	A	20020808		

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

WO 2004015487 ICM G02F001-1335

WO 2004015487 ECLA G02F001/1335D

AB A **liquid crystal display** (LCD) capable to minimize gray inversion includes lower and upper panels facing each other and a liquid crystal **layer** interposed there-between. The upper panel includes a black matrix formed on an inner surface of an insulating substrate, having openings corresponding to pixel areas, and blocking the light leakage between the pixel areas, a plurality of red, green, and blue color filter sequentially arranged in the pixel regions, a flat **layer** formed on the red, green and blue color filters, and a common electrode formed on the flat **layer**, made of transparent conductive material such as ITO (indium tin oxide) or IZO (indium zinc oxide), and supplied with a predetd. voltage for driving the liquid mols. in cooperation with the pixel electrodes. In addition, a light diffraction

layer having micro structure of slit pattern or diffraction lattice is formed between the black matrix and the red, green, or blue color filters. The light diffraction layer is made of transparent conductive material such as ITO or IZO or transparent insulating material such as silicon nitride or silicon oxide. The gap between the slits or width of slits of the light diffraction layer is preferably equal to or less than seven microns and it is possible to have two or more different widths or gaps in the range of equal to or less than 7  $\mu$ .

ST liq crystal display light  
diffraction layer minimization gray inversion  
IT 12033-89-5, Silicon nitride, uses 50926-11-9, ITO 117944-65-7, Indium zinc oxide  
RL: DEV (Device component use); USES (Uses)  
(light diffraction layer; liquid crystal display capable to minimize gray inversion containing panel with light diffraction layer)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

- (1) Citizen Watch Co Ltd; US 5654782 A 1997 HCAPLUS
- (2) Fujitsu Ltd; JP 05-264246 A 1993
- (3) Toshiba Corp; JP 10-90708 A 1998

L75 ANSWER 6 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:905308 HCAPLUS

DN 141:372913

ED Entered STN: 29 Oct 2004

TI Color filter with low reflection and liquid crystal display device

IN Yeh, Sheng-Shiou; Pang, Jia-Pang

PA Taiwan

SO U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM G02F001-1337

INCL 349110000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004212762	A1	20041028	US 2004-831685	20040423
PRAI	TW 2003-92109511	A	20030423		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2004212762	ICM	G02F001-1337
	INCL	349110000
US 2004212762	NCL	349/110.000
	ECLA	G02F001/1335A; G02F001/1335F1

AB A color filter includes a black matrix, and the black matrix has a first antireflection layer and a second antireflection layer on the first antireflection layer. Each antireflection layer includes a first antireflection film having a first refraction index, and a second antireflection film having a second refraction index which is different from the first refraction index. Because of so-called destructive interference of outside source light beams reflected from various interfaces defined by the first and second

antireflection films, net reflection of the light beams by the black matrix back to an outside of the color filter is minimal. For similar reasons, net reflection of internal source light beams by the black matrix back to an inside of the color filter is minimal. As a result, visibility of a liquid crystal display device employing the inventive color filter is improved.

ST color filter low reflection liq crystal display device

IT Liquid crystal displays

Optical filters

Thin film transistors

(color filter with low reflection and liquid crystal display device)

IT 11118-57-3, Chromium oxide 12705-37-2, Chromium nitride 50926-11-9, ITO

RL: DEV (Device component use); USES (Uses)

(color filter with low reflection and liquid crystal display device)

L75 ANSWER 7 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:609763 HCAPLUS

DN 141:164923

ED Entered STN: 30 Jul 2004

TI Color correcting polarizer and liquid crystal display comprising discotic film

IN Paukshto, Michael V.; Silverstein, Louis D.

PA USA

SO U.S. Pat. Appl. Publ., 22 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM C09K019-00

INCL 428001310

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004146663	A1	20040729	US 2003-465083	20030618
	WO 2004068179	A2	20040812	WO 2004-US1832	20040123
	WO 2004068179	A3	20041111		
W:	AE, AE, AG, AL, AL, AM, AM, AM, AT, AT, AU, AZ, AZ, BA, BB, BG, BG, BR, BR, BW, BY, BY, BZ, BZ, CA, CH, CN, CN, CO, CO, CR, CR, CU, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EC, EE, EE, EG, ES, ES, FI, FI, GB, GD, GE, GE, GH, GM, HR, HR, HU, HU, ID, IL, IN, IS, JP, JP, KE, KE, KG, KG, KP, KP, KP, KR, KR, KZ, KZ, KZ, LC, LK, LR, LS, LS, LT, LU, LV, MA, MD, MD, MG, MK, MN, MW, MX, MX, MZ, MZ, NA, NI				
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	US 2003-442440P	P	20030124		
	US 2003-465083	A	20030618		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2004146663	ICM	C09K019-00

US 2004146663 INCL 428001310  
 ECLA C09K019/34B2A; C09K019/60; G02B005/30L; G02F001/1335P  
 WO 2004068179 ECLA C09K019/34B2A; C09K019/60; G02B005/30L; G02F001/1335P  
 OS MARPAT 141:164923  
 AB The objective of the present invention is to provide a polarizer and **liquid crystal display** having good color and grayscale rendering with full correction of color shifts. A color-correcting polarizer is provided comprising a polarizer **layer** and at least one discotic film **layer**. The discotic film **layer** is optically transparent within the range of visible wavelength. The discotic film **layer** works as a polarizer in the wavelength ranges at least from 380 to 500 nm and/or from 600 to 780 nm. A liquid crystal cell comprising the color correcting polarizer is also disclosed. One advantage of the present invention is the preservation of luminance throughput of the liquid crystal cell or the polarizer that is color corrected. The discotic film **layer** of the present invention has high photopic transmittance, i.e. the spectral **light transmittance** weighted by the photopic sensitivity of the eye; the addition of the discotic film **layer** to the polarizer or liquid crystal cell, while providing effective color correction, accomplishes this function with only a **minimal** decrease in photopic **transmittance**, - the typical decrease is in the range of 3-5%, which is negligible for most applications.  
 ST color correcting polarizer **liq crystal display**  
 discotic film  
 IT **Liquid crystal displays**  
 Polarizers  
 (color correcting polarizer and **liquid crystal display** comprising discotic film)  
 IT Liquid crystals  
 (discotic; color correcting polarizer and **liquid crystal display** comprising discotic film)

L75 ANSWER 8 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2004:903908 HCAPLUS  
 DN 141:351217  
 ED Entered STN: 29 Oct 2004  
 TI Adhesive **layer**-protecting release films with high transparency and less oligomer bleeding for **liquid crystal display** members  
 IN Isaki, Kimihiro; Hayashizaki, Keiichi  
 PA Mitsubishi Chemical Polyester Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM B32B027-36  
 ICS B32B027-00; G02B005-30  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 73, 74

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004299344	A2	20041028	JP 2003-97545	20030401
PRAI	JP 2003-97545		20030401		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004299344	ICM	B32B027-36

- ICS B32B027-00; G02B005-30
- JP 2004299344 FTERM 2H049/BA02; 2H049/BA06; 2H049/BB54; 2H049/BC22;  
4F100/AK01B; 4F100/AK21B; 4F100/AK41A; 4F100/AK52C;  
4F100/AR00C; 4F100/BA03; 4F100/BA07; 4F100/BA10A;  
4F100/BA10C; 4F100/CC00B; 4F100/EJ38A; 4F100/GB41;  
4F100/JA20; 4F100/JL14C; 4F100/JN01; 4F100/YY00
- AB The release films have, on simultaneously biaxially oriented polyester films, sequentially formed coating **layers** and release **layers** with residual adhesive strength  $\geq 80\%$  and satisfy OL  $\leq 0.6$ , TL  $\geq 80$ , and  $\min[\text{TL(H)}] \leq 8$  [OL = oligomer amount (mg/m<sup>2</sup>) extracted from film surfaces with DMF after 10-min heat treatment at 180°; TL = total light transmittance (%);  $\min[\text{TL(H)}]$  = the min. TL when sandwiched between a pair of orthogonal polarizing plates]. The films, when laminated on LCD members (e.g., polarizer plates, optical retarders), show high transparency to allow optical inspection of the members without peeling. Thus, PET film was coated with poly(vinyl alc.) and then with KS 847H (curable silicone) and Q unit-containing reactive silicone to give a release film showing OL 0.2 mg/m<sup>2</sup>, TL 87%,  $\min[\text{TL(H)}]$  1.2%, residual adhesive strength 98%, and peel strength 60 mN/cm.
- ST LCD adhesive protection release film transparency; oligomer bleeding free release film LCD; PET release film polyvinyl alc silicone coated; **liq crystal display** polarizer retarder release sheet
- IT Polysiloxanes, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(KS 847H, release **layers**; adhesive **layer**-protecting release films with high transparency and less oligomer bleeding for **liquid crystal display** members)
- IT **Liquid crystal displays**  
Release films  
(adhesive **layer**-protecting release films with high transparency and less oligomer bleeding for **liquid crystal display** members)
- IT Polyesters, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(base films; adhesive **layer**-protecting release films with high transparency and less oligomer bleeding for **liquid crystal display** members)
- IT Anhydrides  
RL: TEM (Technical or engineered material use); USES (Uses)  
(cyclic, aliphatic, polymers with glycols and dicarboxylic acids, amine salts; adhesive **layer**-protecting release films with high transparency and less oligomer bleeding for **liquid crystal display** members)
- IT Polysiloxanes, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(silicate-, reactive, release **layers**; adhesive **layer**-protecting release films with high transparency and less oligomer bleeding for **liquid crystal display** members)
- IT 31900-57-9  
RL: TEM (Technical or engineered material use); USES (Uses)  
(assumed monomers, release **layers**; adhesive **layer**-protecting release films with high transparency and less oligomer bleeding for **liquid crystal display** members)
- IT 25038-59-9, Dimethyl terephthalate-ethylene glycol copolymer, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(base films; adhesive **layer**-protecting release films with

high transparency and less oligomer bleeding for liquid crystal display members)

IT 330206-37-6P, Hexa(methoxymethyl)melamine-vinyl alcohol copolymer  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (coating layers; adhesive layer-protecting release films with high transparency and less oligomer bleeding for liquid crystal display members)

IT 107-21-1D, Ethylene glycol, polymers with glycols and dicarboxylic acids (anhydrides), amine salts 111-46-6D, Diethylene glycol, polymers with glycols and dicarboxylic acids (anhydrides), amine salts 121-91-5D, Isophthalic acid, polymers with glycols and dicarboxylic acids (anhydrides), amine salts 126-30-7D, Neopentyl glycol, polymers with glycols and dicarboxylic acids (anhydrides), amine salts 9002-89-5, Poly(vinyl alcohol)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (coating layers; adhesive layer-protecting release films with high transparency and less oligomer bleeding for liquid crystal display members)

IT 3089-11-0, Hexa(methoxymethyl)melamine  
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)  
 (curing agents, coating layers; adhesive layer-protecting release films with high transparency and less oligomer bleeding for liquid crystal display members)

IT 9016-00-6; KS 774  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (release layers; adhesive layer-protecting release films with high transparency and less oligomer bleeding for liquid crystal display members)

L75 ANSWER 9 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2004:700990 HCAPLUS  
 DN 141:208276  
 ED Entered STN: 27 Aug 2004  
 TI Polyester films for releasing films useful for polarizers of liquid-crystal displays  
 IN Okumura, Hiroki  
 PA Mitsubishi Chemical Polyester Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G02B005-00  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 73, 74

## FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004240174	A2	20040826	JP 2003-29368	20030206
PRAI	JP 2003-29368		20030206		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004240174	ICM	G02B005-00
JP 2004240174	FTERM	2H042/AA04; 2H042/AA07; 2H042/AA23; 2H042/AA26

AB Title films show maximum transmittance of 550-nm light (x) ≤50% under cross nicol, foreign matters with maximum diameter ≥150 μm (y) ≤1 m-2, and foreign matters with maximum

diameter  $\geq 30 \mu\text{m}$  (z)  $\leq 4 \text{ m-2}$ . Thus, a sheet comprising a di-Me terephthalate-ethylene glycol copolymer (I) layer containing 10,000 ppm  $\text{CaCO}_3$ , a I intermediate layer, and a I layer containing 10,000 ppm  $\text{CaCO}_3$  was drawn biaxially and heated to give a film with x 34%, y 0, and z 1.3. Then, a curable silicone releasing agent solution was applied on the film and sandwiched with 2 polarizing films via an adhesive to give a test piece showing good visual inspectability in cross nicol method.

ST polyester releasing film LCD polarizer inspection; cross nicol inspection polarizer polyester film

IT **Liquid crystal displays**

Plastic films

Polarizers

Release films

(polyester releasing films suitable for cross nicol inspection of LCD polarizers)

IT Polyesters, uses

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyester releasing films suitable for cross nicol inspection of LCD polarizers)

IT 25038-59-9P, Dimethyl terephthalate-ethylene glycol copolymer, uses

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyester releasing films suitable for cross nicol inspection of LCD polarizers)

L75 ANSWER 10 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:529936 HCAPLUS

DN 141:73064

ED Entered STN: 02 Jul 2004

TI Coating liquid with good chemical, contamination, abrasion, and scratch resistance for transparent coating films, transparent coating attached substrates, and display devices

IN Kumasawa, Mitsuaki; Matsuda, Masayuki; Hirai, Toshiharu

PA Catalysts and Chemicals Industries Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 23 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09D183-02

ICS B32B007-02; B32B027-00; C08G077-02; C08G077-48; C09D183-00; C09D183-14; G02B001-10; G02B001-11; H01L021-312

CC 42-10 (Coatings, Inks, and Related Products)

Section cross-reference(s): 74, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004182929	A2	20040702	JP 2002-353908	20021205
PRAI	JP 2002-353908		20021205		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004182929	ICM	C09D183-02
	ICS	B32B007-02; B32B027-00; C08G077-02; C08G077-48; C09D183-00; C09D183-14; G02B001-10; G02B001-11; H01L021-312
JP 2004182929	FTERM	2K009/AA04; 2K009/CC09; 2K009/CC42; 2K009/DD02; 2K009/EE03; 4F100/AH06C; 4F100/AK52C; 4F100/AK52K; 4F100/AR00C; 4F100/AT00A; 4F100/BA03; 4F100/BA10A;

4F100/BA10C; 4F100/BA26; 4F100/DE01B; 4F100/GB41;  
 4F100/JG01B; 4F100/JG04; 4F100/JK01; 4F100/JK12;  
 4F100/JL06; 4F100/JN01B; 4F100/JN01C; 4F100/JN06;  
 4F100/JN18B; 4F100/JN18C; 4J035/AA03; 4J035/AA05;  
 4J035/BA05; 4J035/BA15; 4J035/CA132; 4J035/CA142;  
 4J035/CA162; 4J035/HA01; 4J035/HA02; 4J035/HA06;  
 4J035/LB01; 4J038/DL001; 4J038/DL021; 4J038/KA08;  
 4J038/MA02; 4J038/NA01; 4J038/NA07; 4J038/NA11;  
 4J038/NA19; 4J038/PB08; 4J038/PB09; 5F058/AA05;  
 5F058/AC10; 5F058/AF04; 5F058/AH03

- AB The matrix precursors of the title liquid comprise (A) tetraalkoxysilane hydrolyzates and (B) 0.5-50% (based on solid content) cohydrolyzates of tetraalkoxysilanes and 2-60%  $\geq 1$  organic silicone compound selected from R1OSiR<sub>4</sub>R<sub>3</sub>R<sub>4</sub>, R1OSiR<sub>4</sub>R<sub>4</sub>SiR<sub>3</sub>R<sub>6</sub>OR<sub>2</sub>, R1OSiR<sub>3</sub>R<sub>4</sub>SiR<sub>5</sub>R<sub>6</sub>OR<sub>2</sub>, and R1OSiR<sub>3</sub>R<sub>4</sub>XR<sub>7</sub>, wherein R<sub>1</sub>, R<sub>2</sub> = alkyl, halogenated alkyl, aryl, alkylaryl, arylalkyl, alkenyl, H, or halogen atom; R<sub>a</sub>, R<sub>b</sub> = fluoro-containing alkyl; R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub> = alkyl, halogenated alkyl, aryl, alkylaryl, arylalkyl, alkenyl, alkoxy, H, or halogen atom; X = (CH<sub>2</sub>)<sub>n</sub>, Ph, (CH<sub>2</sub>)<sub>n</sub>Ph, (CH<sub>2</sub>)Ph(CH<sub>2</sub>)<sub>n</sub>Ph, Sm, (CH<sub>2</sub>)<sub>n</sub>Si(CH<sub>2</sub>)<sub>n</sub>, (CH<sub>2</sub>)<sub>n</sub>(CF<sub>2</sub>)<sub>n</sub>(CH<sub>2</sub>)<sub>n</sub>; and m, n = 1-30 integer. Thus, 11.4 g 10%-solids tetraethoxysilane hydrolyzate solution and 4 g 1.5%-solids hydrolyzate solution of tetraethoxysilane and KBM 7803 were dispersed in 84.6 g a solvent mixture, which was applied on a transparent conductive coating-coated glass panel, baked at 160° for 30 min to give a substrate with surface elec. resistance 4.5 + 10<sup>4</sup> Ω/.box., **min. reflectance** 1.1% and average reflectance 1.4% between 400-700 nm, haze 0.2%, good abrasion and scratch resistance, and fingerprint removability.
- ST transparent coating liq chem contamination abrasion scratch resistance; **liq crystal display**; tetraethoxysilane homopolymer fluorosilsesquioxane silicate blend coating
- IT Coating materials  
 (abrasion- and scratch-resistant; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Silicates, uses  
 RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (blend with fluorosilsesquioxane-silicate; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Optical imaging devices  
 (coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Transparent materials  
 (coatings; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Electric conductors  
 (conductive **layers**; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Coating materials  
 (elec. conductive; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Silsesquioxanes  
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
 (low **refractive** particles, reaction products with silicates)

- and aluminates; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Silica gel, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reactant in low **refractive** particle preparation; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Coating materials  
(reflective, low; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Silsesquioxanes  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(silicate-, fluorine-containing, blend with silicates; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Fluoropolymers, uses  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(silicate-silsesquioxane-, blend with silicates; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT Coating materials  
(transparent; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT 11099-06-2P, Tetraethoxysilane homopolymer  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(blend with fluorosilsesquioxane-silicate; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT 163004-18-0P, KBM 7803-tetraethoxysilane copolymer 215879-20-2P 712357-07-8P 712357-08-9P  
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(blend with silicate; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT 7631-86-9DP, Silica, Me substituted  
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
(composite with alumina, low **refractive** particle; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT 1344-28-1DP, Alumina, Me substituted  
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
(composite with silica, low **refractive** particle; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)
- IT 12673-86-8P, Antimony tin oxide 12735-99-8P 50926-11-9P, ITO  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(conducting layer; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)

IT 25498-03-7DP, Methyltrimethoxysilane homopolymer, reaction products with silicates and aluminates 153315-80-1DP, Methyltrimethoxysilane homopolymer, ladder sru, reaction products with silicates and aluminates  
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
 (low refractive particle; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)

IT 7761-88-8, Silver nitrate, reactions 7772-99-8, Tin chloride, reactions 10102-05-3, Palladium nitrate 12030-97-6, Potassium titanium oxide (K<sub>2</sub>TiO<sub>3</sub>) 13770-61-1, Indium nitrate 174141-46-9, Antimony chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant in elec. conductive particle preparation; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)

IT 1344-09-8, Sodium silicate 11138-49-1, Sodium aluminate  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant in low refractive particle preparation; coating liquid with good chemical, contamination, scratch, and scratch resistance for transparent coating films useful for display devices)

L75 ANSWER 11 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:52670 HCAPLUS

DN 140:102144

ED Entered STN: 22 Jan 2004

TI Manufacture of polarizing films with **minimized interference** coloring for large **liquid crystal displays**

IN Isozaki, Takanori; Hayashi, Satoshi

PA Kuraray Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM B29C055-02

ICS C08J005-18; G02B005-30; G02F001-1335; B29K029-00; B29L007-00; B29L011-00; C08L029-04

CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38, 73

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004017321	A2	20040122	JP 2002-171846	20020612
PRAI	JP 2002-171846		20020612		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004017321	ICM	B29C055-02
	ICS	C08J005-18; G02B005-30; G02F001-1335; B29K029-00; B29L007-00; B29L011-00; C08L029-04
JP 2004017321	FTERM	2H049/BA02; 2H049/BA25; 2H049/BA27; 2H049/BB33; 2H049/BB43; 2H049/BB51; 2H049/BC09; 2H049/BC14; 2H049/BC22; 2H091/FA08X; 2H091/FA08Z; 2H091/FB02; 2H091/FC07; 2H091/FC22; 2H091/GA16; 2H091/LA30; 4F071/AA29; 4F071/AH16; 4F071/BA01; 4F071/BA02; 4F071/BB06; 4F071/BB07; 4F071/BC01; 4F210/AA19;

4F210/AE10; 4F210/AG01; 4F210/AH73; 4F210/QA03;  
4F210/QC02; 4F210/QD06; 4F210/QD34; 4F210/QG01;  
4F210/QG18; 4F210/QM02; 4F210/QM04; 4F210/QW05;  
4F210/QW17

- AB Poly(vinyl alc.) films are stretched between hot rolls satisfying static friction coefficient ( $\alpha$ ; to the PVA films)  $\leq 0.1$  and stretching rolls satisfying  $\alpha \geq 0.2$  in dry state to give polarizing films with the mentioned advantages. The hot rolls may be coated with hydrophobic polymers (e.g., Teflon).
- ST LCD polarizing film **interference** coloring **minimized**;  
static friction regulated roll stretching polarizing film
- IT Fluoropolymers, uses  
RL: DEV (Device component use); USES (Uses)  
(hot roll coating **layers**; manufacture of PVA polarizing films with **minimized interference** fringes for large LCD)
- IT **Liquid crystal displays**  
Polarizing films  
Rolls  
(manufacture of PVA polarizing films with **minimized interference** fringes for large LCD)
- IT Molding of plastics and rubbers  
(stretch; manufacture of PVA polarizing films with **minimized interference** fringes for large LCD)
- IT 9002-84-0, Teflon  
RL: DEV (Device component use); USES (Uses)  
(hot roll coating **layers**; manufacture of PVA polarizing films with **minimized interference** fringes for large LCD)
- IT 9002-89-5, Poly(vinyl alcohol)  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(manufacture of PVA polarizing films with **minimized interference** fringes for large LCD)
- L75 ANSWER 12 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN
- AN 1040806278 JICST-EPlus
- TI Poincare Sphere Analysis of Reflective Liquid Crystal Device
- AU ZHANG Y; WANG B; BOS P J  
CHUNG D B
- CS Kent State Univ., Oh, Usa  
Intel Corp., Ca, Usa
- SO Jpn J Appl Phys Part 1, (2004) vol. 43, no. 10, pp. 7125-7128. Journal  
Code: G0520B (Fig. 6, Ref. 4)  
ISSN: 0021-4922
- CY Japan
- DT Journal; Article
- LA English
- STA New
- AB In this paper, we explain the design principle of a reflective liquid crystal device using Poincare sphere analysis. The evolution of the **polarization** state of light progressing through the liquid crystal **layer** and a compensator is shown. The analysis method provides a device optimization procedure that follows clearly from the effect of device parameters on the **polarization** state of light. (author abst.)
- CC NC06030Q (621.385:621.397)
- CT **liquid crystal display**; optical reflection; Poincare sphere; optimum design; **polarized** light; compensator(optics); light propagation
- BT display device; equipment; electromagnetic wave

reflection; reflection; spherical surface; quadric surface; curved surface; face; design; **polarized** wave; **polarization**; optical element; optical system; electromagnetic wave propagation; wave propagation; propagation(transmission)  
ST device parameter

- L75 ANSWER 13 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 1040423171 JICST-EPlus  
TI **Polarizer** and Retardation Films for LCDs  
AU FUJIMURA YASUO  
CS Nitto Denko Corp., JPN  
SO Kobunshi (High Polymers, Japan), (2004) vol. 53, no. 6, pp. 428. Journal Code: F0168A (Fig. 1, Ref. 2)  
CODEN: KOBUA3; ISSN: 0454-1138  
CY Japan  
DT Journal; Commentary  
LA Japanese  
STA New  
AB This paper explains the following items on the titled technology: 1) Principle of high precision and large area image display by LCD; combination of **polarization** film and LCD to pass only **polarized** light in one direction, because photoelectric characteristics of LC is based on change in **polarized** state of **transmitting** light, which cannot be recognized as it is by human eye as image, 2) problem of LCD; view angle characteristics because **polarized** light **transmitting** a LC layer changes **polarization** state depending on **transmitting** angle or **light wavelength**, 3) retardation film is used to correct optical strain of LCD and 4) detailed technology of **polarizer** and retardation films.  
CC CG02024U; BD060600; NC06030Q (544.23-16:535/538; 681.7+; 621.385:621.397)  
CT polymeric nonlinear optical material; information technology; technological review; **liquid crystal display**; depolarization(light); electrooptic effect  
BT photoresponsive polymer; functional polymer; macromolecule; nonlinear optical material; optical material; material; review; display device; equipment; **polarization** property; optical property; electric field effect; effect
- L75 ANSWER 14 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN  
AN 2005(6):7748 COMPENDEX  
TI Numerical optimization of 2 **polarizer** reflective TN display.  
AU Olifierczuk, Marek (Military University of Technology, 00-908 Warsaw, Poland); Zielinski, Jerzy  
MT Proceedings of the 19th International Liquid Crystal Conference, ILCC2002.  
ML Edinburgh, United Kingdom  
MD 30 Jun 2002-05 Jul 2002  
SO Molecular Crystals and Liquid Crystals v 410 2004.p 329/[857]-337/[865]  
CODEN: MCLCD8 ISSN: 1542-1406  
PY 2004  
MN 64259  
DT Conference Article  
TC Theoretical  
LA English  
AB The analysis of display static optical parameters such as luminance and **contrast** ratio has been done using the special computer program. The influence of the optical parameters of individual display elements on the parameters of the whole display has been given (especially **polarization** coefficient of the **polarizing** films and dichroic properties of liquid crystal layer - "guest-host")

effect). The way of the optimization of the reflective TN display has been shown for its different applications. The possibility of an improvement of **contrast** ratio and **brightness** for this display has been set. 10 Refs.

- CC 741.3 Optical Devices and Systems; 931.2 Physical Properties of Gases, Liquids and Solids; 741.1 Light. Optics; 921.5 Optimization Techniques; 723 Computer Software, Data Handling and Applications
- CT **\*Liquid crystal displays**; Anisotropy; Mathematical models; Luminescence; Computer software; Light **interference**; Light absorption; Nematic liquid crystals; **Light reflection**; Optimization; Light **polarization**
- ST Numerical modeling; Optical parameters; Reflective **LCD**; **Polarizers**
- ET N\*T; TN; T cp; cp; N cp
- L75 ANSWER 15 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN
- AN 2005(6):7745 COMPENDEX
- TI Improved performance of a single-**polarizer** DTN-LCD with a retardation film.
- AU Fukuda, Ichiro (O. E. Device System R and D Center Kanazawa Institute of Technology, Nonoichi, Ishikawa, 921-8501, Japan); Izo, Takashi; Yunoki, Shinji
- MT Proceedings of the 19th International Liquid Crystal Conference, ILCC2002.
- ML Edinburgh, United Kingdom
- MD 30 Jun 2002-05 Jul 2002
- SO Molecular Crystals and Liquid Crystals v 410 2004.p 301/[829]-309/[837]  
CODEN: MCLCD8 ISSN: 1542-1406
- PY 2004
- MN 64259
- DT Conference Article
- TC Experimental
- LA English
- AB We numerically analyzed the relationship between the electro-optical properties and the on-voltage of a TFT-LCD in a single-**polarizer** reflective double-**layered** TN-LCD (DTN-LCD) with a retardation film in order to confirm the possibility of reducing power consumption. Our results demonstrate that the LCD exhibits an achromatic image of high luminous reflectance of about 50% and very high **contrast** ratio, even if the on-voltage is reduced to 2 V. The power consumption can thus be decreased to about 1/6 that of the presently used reflective 5 V TFT-LCD in the on-state. 6 Refs.
- CC 741.3 Optical Devices and Systems; 931.2 Physical Properties of Gases, Liquids and Solids; 701.1 Electricity: Basic Concepts and Phenomena; 741.1 Light. Optics; 713.5 Other Electronic Circuits; 921.6 Numerical Methods
- CT **\*Liquid crystal displays**; Numerical analysis; **Light reflection**; Electric potential; Electric power supplies to apparatus; Optical films; Image quality; Nematic liquid crystals; Electrooptical effects; Light **polarization**
- ST Reduced power consumption; Reflective DTN-LCD; Retardation films; Single **polarizers**
- ET N\*T; TN; T cp; cp; N cp

- L75 ANSWER 16 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN
- AN 2004(34):6268 COMPENDEX
- TI Applications of photorefractive liquid crystals.
- AU Bartkiewicz, S. (Inst. of Phys./Theoretical Chemistry Wroclaw University of Technology, 50-370 Wroclaw, Poland); Mysliwiec, J.; Miniewicz, A.
- MT Organic Photonic Materials and Devices VI.
- MO SPIE - The International Society for Optical Engineering
- ML San Jose, CA, United States

MD 27 Jan 2004-29 Jan 2004  
 SO Proceedings of SPIE - The International Society for Optical Engineering v  
 5351 2004.p 158-165  
 CODEN: PSISDG ISSN: 0277-786X  
 PY 2004  
 MN 63381  
 DT Conference Article  
 TC Experimental  
 LA English  
 AB In this paper we present experimental results of study of liquid crystal  
**panels** (LCP) designed for dynamic holography, with new  
 photoconducting and photorefractive elements as their parts. We used  
 either microcrystals or photochromic molecules which were added to the  
 liquid crystal mixture, alternatively photoaligning polymers or polyvinyl  
 carbazole doped with trinitrofluorenone (PVK:TNF) and polyoctylthiophene  
 as photoconducting **layers** were employed. Studies of light  
 diffraction efficiency ( $\eta$ ) were made in a typical degenerate two-wave  
 mixing experiments (DTWM). We report here results of **maximum**  
**diffraction** efficiencies obtained for different type of LCPs. The  
 highest  $\eta$  was measured in LCP with PVK:TNF **layer** ( $\eta=32\%$ )  
 and the lowest were reported for LCP containing microcrystals ( $\eta=0.01\%$ ).  
 Best of developed LCPs were used as media for dynamic holographic  
 applications. Elimination of phase distortion in degenerate four-wave  
 mixing (DFWM) experiment, reconstruction of binary holograms and optical  
 correlation are only few representative examples of applications  
 demonstrated recently in our laboratory. 9 Refs.  
 CC 804 Chemical Products Generally; 741.3 Optical Devices and Systems; 722.2  
 Computer Peripheral Equipment; 743 Holography; 714.2 Semiconductor Devices  
 and Integrated Circuits; 815.1 Polymeric Materials  
 CT \*Liquid crystals; Optical filters; Photochemical reactions; Diffraction;  
 Optical correlation; **Refractive** index; Photorefractive  
 materials; **Liquid crystal displays**; Holography; Photoconducting  
 devices; Polymers  
 ST Photorefractive liquid crystals; Dynamic holography; **Refractive**  
 index grating; Liquid crystal **panels**  
 L75 ANSWER 17 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN  
 AN 2004(20):5248 COMPENDEX  
 TI Electrostatic actuated optical Fabry-Perot switches in passive matrix  
 displays.  
 AU Knieling, T. (Inst. Microsensors, Actuators/Syst. University of Bremen,  
 D-28334 Bremen, Germany); Panitz, M.; Benecke, W.  
 MT MOEMS Display and Imaging Systems II.  
 MO SPIE  
 ML San Jose, CA., United States  
 MD 26 Jan 2004-27 Jan 2004  
 SO Proceedings of SPIE - The International Society for Optical Engineering v  
 5348 2004.p 108-118  
 CODEN: PSISDG ISSN: 0277-786X  
 PY 2004  
 MN 62795  
 DT Conference Article  
 TC Experimental  
 LA English  
 AB In this paper a new approach for the realisation of a passive matrix image  
 projection display consisting of electrostatic actuated Fabry-Perot  
 filters for digital wavelength switching is presented. The switches either  
 may be working by illumination with polychromatic or with monochromatic  
 light, e.g. by a laser. In the first case the output light has to be  
 filtered at the desired wavelength. In order to define the interferometric

properties of the dielectric layers and thus the switching wavelength optical parameters like thickness and refractive index have to be adjusted carefully. The display switches can be adapted either to reflection or transmission mode, depending on whether silicon or quartz is used as substrate material. Especially hexagonal shaped pixel membranes for working either in reflection at a wavelength of 536 nm or in transmission for 500 nm are described. The assembly is arranged matrix-like in rows and columns, where at each intersection point a pixel is located. The switching of a pixel into the 'on'-state is achieved by applying a voltage on the corresponding row and column contact lines of the display. The resulting intersection potential deflects the addressed pixel membrane whereas adjacent pixels are nearly not affected. Actual measurements allow high switching frequencies of about 2 kHz at voltages in the range of 2 - 60 V, depending on the pixel design. The switching contrast maximum is about 80 %, the contrast between addressed and non-addressed adjacent pixels is 75 %. 12 Refs.

CC 741.3 Optical Devices and Systems; 732.1 Control Equipment; 941.3 Optical Instruments; 714.2 Semiconductor Devices and Integrated Circuits; 708.1 Dielectric Materials; 741.1 Light. Optics

CT \*Optical switches; **Light reflection**; Information technology; Photolithography; **Refractive index**; Switching theory; Electrostatic actuators; Fabry-Perot interferometers; Monochromators; Light emitting diodes; **Liquid crystal displays**; Dielectric materials

ST Fabry-Perot-filter; Image projection; Passive matrix displays; Monochromatic light

ET V; 60V; is; V is

L75 ANSWER 18 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 1040184330 JICST-EPlus

TI Flexible Reflective Ferroelectric Liquid Crystal Devices

AU SATO HIROTO; FUJIKAKE HIDEO; KIKUCHI HIROSHI; KURITA TAIICHIRO

CS Japan Broadcasting Corp., Sci. and Technical Res. Lab., JPN

SO Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku (IEIC Technical Report (Institute of Electronics, Information and Communication Engineers)), (2004) vol. 103, no. 593(EID2003 41-57), pp. 9-12. Journal Code: S0532B (Fig. 8, Ref. 11)

ISSN: 0913-5685

CY Japan

DT Journal; Article

LA Japanese

STA New

AB We fabricated flexible reflective ferroelectric liquid crystal (FLC) devices monostabilized by polymer walls and networks. To control the thickness of the thin composite film of FLC and polymer, etched spacers were formed on a plastic film substrate by photolithography. Subsequently, the substrate was uniformly coated with an FLC/monomer solution by flexographic printing method. An insulator layer was also formed on another substrate to avoid short circuit between ITO electrodes. After lamination of the coated substrate and the substrate with the insulator layer was performed, the polymer walls and networks were formed in the FLC by two-step irradiation of ultraviolet light. A fabricated reflective FLC device sandwiched by a polarizer and a mirror film exhibited mechanical flexibility and light modulation with grayscale capability. (author abst.)

CC NC06030Q (621.385:621.397)

CT liquid crystal display; ferroelectric liquid crystal; flexibility; plastic film; photolithography; flexographic printing; spacer; pattern formation

BT display device; equipment; liquid crystal; mesophase;  
phase(thermodynamics); ferroelectrics; dielectrics; dielectric material;  
material; property; lithography; printing(graphic arts); object

L75 ANSWER 19 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:931617 HCAPLUS

DN 139:401652

ED Entered STN: 28 Nov 2003

TI Method of characterization of liquid crystal  
display cell

IN Valyukh, Sergiy; Skarp, Kent; Slobodyanyuk, Oleksandr

PA Swedish Lcd Center, Swed.

SO PCT Int. Appl., 16 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM G02F001-13

ICS G01B011-06; G01N021-45

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003098333	A1	20031127	WO 2003-UA16	20030519
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI UA 2002-54098	A	20020520		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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WO 2003098333	ICM	G02F001-13
	ICS	G01B011-06; G01N021-45
WO 2003098333	ECLA	G01B011/06C2; G01N021/45

AB A method for simultaneous measuring a thickness of a liquid crystal  
layer and an average refractive index of the said liquid crystal in  
sealed liquid crystal cell is disclosed. The method is based on anal. of  
spectral positions of maxima and min. of  
interference oscillations, their magnitudes and their envelope in  
the spectrum of light mirrored by the liquid crystal cell at several  
different angles-of-incidence. The method is applicable to cells filled  
with different liquid crystals including cholesterics and smectics.

ST simultaneous measuring thickness refractive index liq  
crystal display cell

IT Liquid crystal displays

Refractive index

Spectra

Thickness

(simultaneous measuring thickness and average refractive index of  
liquid crystal display cell)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Autronic-Melchers Gmbh; WO 0043829 A1 2000 HCAPLUS

- (2) Meiryō Tekunika Kabushiki Kaisha; US 5966195 A 1999 HCAPLUS  
 (3) Nii Rossiisky Tsentri Lasernoi Fiziki Pri Sanktpeterburgskom Gosudarstvennom Universitete; RU 2152588 C1 2000  
 (4) The Hong Kong University Of Science & Technology; US 6081337 A 2000

L75 ANSWER 20 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:174166 HCAPLUS

DN 138:196030

ED Entered STN: 07 Mar 2003

TI Three level stacked reflective display

IN Matsumoto, Keiji; Romankiw, Lubomyr Taras; Sueoka, Kuniaki; Taira, Yoichi; Takeda, Keizoh

PA International Business Machines Corporation, Japan

SO U.S. Pat. Appl. Publ., 34 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM G02F001-1333

INCL 349084000

CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003043316	A1	20030306	US 2001-996836	20011129
	US 6844957	B2	20050118		
PRAI	US 2000-253833P	P	20001129		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2003043316	ICM	G02F001-1333
	INCL	349084000
US 2003043316	NCL	349/084.000
	ECLA	G02F001/1347; G02F001/1362H; G02F001/167; H01L027/32C2

AB A structure and fabrication technol. for a **reflective**, ambient **light**, low cost display is described incorporating a plurality of cells laid out side by side and stacked as many as three levels on top of each other. Each stack of three cells being driven by an array of TFT's positioned on the bottom **layer**. Each cell comprises a **light transmitting** front window, three levels of individual cells RGB (Red, Green, and Blue) stacked on top of each other, each level having its own individual electrode, each electrode being connected by vertical conducting via holes running through each transparent dielec. spacers and being connected to a individual TFT. The bottom panel having a reflective surface so as to provide **maximum reflectivity** of the ambient **light**. Placed under the reflective surface is an array of TFT's which provide the elec. impulses necessary to set each individual potential in each vertically stacked cell with respect to ground potential. A transmissive **liquid crystal display** can readily be fabricated by deleting the reflective surface. Also described are structures and assembly methods suitable for fabricating a Guest-Host LCD, a Cholesteric LCD, a Holog. Polymer Dispersed LCD and an Organic Light Emitting Diode (OLED) display.

ST reflective **display** three level stacked **liq crystal** LCD; org light emitting diode display OLED reflective; electrophoretic display thin film transistor reflective three level stacked

IT Electroluminescent devices

(displays; three level stacked **reflective** ambient

IT light low cost display with thin film transistor array)  
 Luminescent screens  
 (electroluminescent; three level stacked **reflective** ambient  
 light low cost display with thin film transistor array)  
 IT Optical imaging devices  
 (electrophoretic; three level stacked **reflective** ambient  
 light low cost display with thin film transistor array)  
 IT Liquid crystal displays  
 (guest-host, cholesteric, holog. polymer dispersed; three level stacked  
**reflective** ambient light low cost display with thin  
 film transistor array)  
 IT Electrophoresis apparatus  
 (optical imaging; three level stacked **reflective** ambient  
 light low cost display with thin film transistor array)  
 IT Thin film transistors  
 (three level stacked **reflective** ambient light low  
 cost display with thin film transistor array)  
 IT 50926-11-9, ITO  
 RL: DEV (Device component use); USES (Uses)  
 (electrode; three level stacked **reflective** ambient  
 light low cost display with thin film transistor array)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Aomori; US 5625474 A 1997 HCAPLUS
- (2) Forrest; US 5707745 A 1998 HCAPLUS
- (3) Shimizu; US 5995188 A 1999 HCAPLUS
- (4) Tanaka; US 5712695 A 1998 HCAPLUS

L75 ANSWER 21 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:980479 HCAPLUS

DN 142:249350

ED Entered STN: 17 Nov 2004

TI Ink-jet reflective layer for liquid crystal  
 display

IN Ahn, Ji Yeong

PA LG Philips LCD Co., Ltd., S. Korea

SO Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DT Patent

LA Korean

IC ICM G02F001-1335

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)

Section cross-reference(s): 73, 76

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI KR 2003052093	A	20030626	KR 2001-81909	20011220
PRAI KR 2001-81909		20011220		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
KR 2003052093	ICM	G02F001-1335

AB An ink-jet reflective layer for a liquid crystal  
 display is provided to improve the efficiency of a process and  
 maximize the efficiency of reflection by increasing the  
 d. of uneven patterns. First and second substrates are arranged to face  
 each other. A liquid crystal layer is interposed between the  
 first and second substrates. A thin film transistor is formed on the  
 first substrate. A lower transparent electrode is connected with the thin

film transistor. An insulating layer is formed on the thin film transistor and the lower transparent electrode. An ink-jet reflective layer is placed on the insulating film, having an uneven structure formed of a plurality of convex patterns, so that external inflow light is reflected in several directions by the convex patterns. A color filter layer is formed under the second substrate. An upper transparent electrode is formed under the color filter layer.

ST ink jet reflective layer liq crystal  
display  
IT Ink-jet printing  
Liquid crystal displays  
Optical reflectors  
Thin film transistors  
(ink jet reflective layer for liquid crystal display)

L75 ANSWER 22 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 2003:804931 HCAPLUS  
DN 139:314587  
ED Entered STN: 14 Oct 2003  
TI Transparent film substrates and display or electronic devices using them with reduced interference fringes  
IN Shiraishi, Isao; Hanada, Toru; Saito, Tokuaki; Hara, Hiroshi; Yatabe, Toshiaki  
PA Teijin Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 10 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM B32B027-08  
ICS B32B007-02; B32B009-00; C08J007-18; G02B001-10; C08L087-00  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 38, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003291274	A2	20031014	JP 2002-96158	20020329
PRAI	JP 2002-96158		20020329		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2003291274	ICM	B32B027-08
	ICS	B32B007-02; B32B009-00; C08J007-18; G02B001-10; C08L087-00

AB The substrates, giving liquid crystal displays with good visibility, consist of polymer films (A, light transmittance  $\geq 80\%$ ), gas-barrier layers (B, oxides and/or nitrides, preferably), and solvent-resistant layers (C, thickness 0.01-20  $\mu\text{m}$ ) obtained from curable polymers, wherein the layers C are in contact with A and the difference between refractive index of A and that of C is  $\leq 0.02$ . Preferably, the layers C are formed by applying coatings containing fluorene-type monomers on A and curing them by radiation or heat.

ST display film fluorene cardo polycarbonate transparency; liq crystal display interference fringe redn;  
solvent resistance fluorene acrylate coating LCD

IT Polycarbonates, uses  
RL: TEM (Technical or engineered material use); USES (Uses)

(cardo, film; transparent film substrates for displays with reduced interference fringes)

IT Cardo polymers  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polycarbonates, film; transparent film substrates for displays with reduced interference fringes)

IT Coating materials  
(solvent-resistant; transparent film substrates for displays with reduced interference fringes)

IT Electric apparatus  
**Liquid crystal displays**  
Plastic films  
Transparent films  
(transparent film substrates for displays with reduced interference fringes)

IT 25037-45-0, Bisphenol A-carbonic acid copolymer 132721-26-7, APEC HT 9371 175161-35-0, 9,9-Bis(4-hydroxy-3-methylphenyl)fluorene-bisphenol A-carbonic acid copolymer  
RL: TEM (Technical or engineered material use); USES (Uses)  
(assumed monomers, film; transparent film substrates for displays with reduced interference fringes)

IT 50926-11-9, ITO  
RL: TEM (Technical or engineered material use); USES (Uses)  
(elec. conductive layer; transparent film substrates for displays with reduced interference fringes)

IT 24936-68-3, Bisphenol A-carbonic acid copolymer, sru, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(film; transparent film substrates for displays with reduced interference fringes)

IT 7631-86-9, Silica, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(gas-barrier layer; transparent film substrates for displays with reduced interference fringes)

IT 198765-74-1P, 3-Aminopropyltrimethoxysilane-2-(3,4-epoxycyclohexyl)ethyltrimethoxysilane copolymer 592552-58-4P  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(solvent-resistant layer; transparent film substrates for displays with reduced interference fringes)

L75 ANSWER 23 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:196846 HCAPLUS

ED Entered STN: 12 Mar 2003

TI **Liquid crystal display.** [Machine Translation].

IN Tako, Keiji

PA Toshiba Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G02F001-1335

ICS G02F001-1336; G09F009-30; G09F009-35

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003075825	A2	20030312	JP 2001-264255	20010831
PRAI	JP 2001-264255		20010831		

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

-----  
JP 2003075825 ICM G02F001-1335  
ICS G02F001-1336; G09F009-30; G09F009-35  
AB [Machine Translation of Descriptors]. At the time of reflection indication and transmission indicating, high picture quality stabilizing the picture, it designates that it offers the **liquid crystal display** which can indicate as purpose. The **liquid crystal display** has, baseplate of pair and 200 the **liquid-crystal display panel** the **back light unit 400** which illuminates 10 where keeps liquid crystal **layer 300** between 100 and **liquid-crystal display panel 10** from the **rear** and. One pixel territory P has, reflecting plain air, transmitting the back light light which radiation is done from reflection section PR and it does indication back light unit, 400 the transmitted section PT which does indication and. The 1st direction where strength of the reflected light which is reflected at the time of **reflection** section ADVERTISING becomes **maximum**, almost being identical with the 2nd direction where strength of the back light light which was transmitted in **transmitted section PT** becomes **maximum**, at the same time, 1st direction and 2nd direction specified angle just it features that it is tilted vis-a-vis the normal direction O of **liquid-crystal display panel 10**.

L75 ANSWER 24 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 1030156251 JICST-EPlus  
TI Making of flexible display and trends in making of paper-like **display**. Digital paper using the chiral nematic **liquid crystal**.  
AU UEDA HIDEAKI  
CS Minoruta Takatsukiken Gazojohogise  
SO O plus E, (2003) no. 280, pp. 296-300. Journal Code: Z0994A (Fig. 10, Tbl. 2, Ref. 11)  
ISSN: 0911-5943  
CY Japan  
DT Journal; General Review  
LA Japanese  
STA New  
AB Digital paper (DP) using the chiral nematic (CN) liquid crystal was explained. The CN **liquid crystal** has such features as **reflecting type display**, memory, **light weight**, thin type and low-cost and has a simple element composition. The **wavelength-selectivity reflection** by the **light interference** based on helical structure of molecular sequence is a basis on the display principle. The reflectivity can be changed by the orientational control of liquid crystal by size and width of the applied voltage pulse. And, there is a bistable state in the direction of helical axis in the non-electric field, and the memory is obtained. The full color display was also enabled by the trial manufacture of **layered** structure of the each monochromatic liquid crystal panel of three primary colors and elements using the plastic film substrate. In comparison with other liquid crystal systems, it is advantageous in that the DP by CN crystal liquid is good in visibility, the power consumption is very low in a still picture, etc., and it will be an optimum system in full color DP.

CC NC06020F; NC06030Q; BK03020W (621.3:681.327.1; 621.385:621.397; 544.252.22)  
CT information medium; optical recording; nematic phase; chiral symmetry; digital image; device structure; molecular orientation; driving mechanism; color image; **liquid crystal display**; digital recording  
BT recording; liquid crystal; mesophase; phase(thermodynamics); symmetry;

mathematical property; property; image; orientation(direction); mechanism;  
display device; equipment

- L75 ANSWER 25 OF 96 INSPEC (C) 2005 IEE on STN  
AN 2003:7757135 INSPEC DN A2003-23-4280G-002; B2003-11-7260F-021  
TI 3M PBS for high performance LCOS optical engine.  
AU Eckhardt, S.; Bruzzone, C.; Aastuen, D.; Ma, J. (3M Opt. Syst. Div., St. Paul, MN, USA)  
SO Proceedings of the SPIE - The International Society for Optical Engineering (2003) vol.5002, p.106-10. 8 refs.  
Published by: SPIE-Int. Soc. Opt. Eng  
Price: CCCC 0277-786X/03/\$15.00  
CODEN: PSISDG ISSN: 0277-786X  
SICI: 0277-786X(2003)5002L:106:HPLO;1-U  
Conference: Projection Displays IX. Santa Clara, CA, USA, 22-23 Jan 2003  
Sponsor(s): SPIE; Soc. Imaging Sci. & Technol  
DT Conference Article; Journal  
TC New Development; Practical  
CY United States  
LA English  
AB A new 3M **polarizing** beamsplitter (PBS) enables high performance optical engines for liquid crystal on silicon (LCOS) projectors. It overcomes the limitations of previous LCOS optical engines that have insufficient light efficiency, **contrast**, and dark state uniformity. These limitations are the direct result of the performance of existing MacNeille PBS's: poor transmission of **p-polarized** light and reduced **contrast** at modest beam angles and wavelength sensitivity. 3M has addressed these problems by creating a plastic **polarizing** film made of alternating **layers** of different plastics with the **refractive** indices tailored so that they match in one in-plane direction but not the other. In the unmatched direction, a highly **reflective** quarter-wave stack is formed, while in the matched direction the film acts as a transparent slab of plastic. This film is laminated between glass prisms to form a PBS with performance far superior to a MacNeille PBS's. For an F/2 beam, across the visible, transmission of **p-polarized** light exceeds 92% and **contrast** exceeds 1000:1. High **contrast** is achievable in an optical engine without the use of a post-**polarizer**, avoiding this 15% loss that is necessary with a MacNeille PBS. Finally, the input light need not be highly **polarized**, allowing the engineer additional design freedom.
- CC A4280G Optical prisms and projection systems; A4280H Optical beam splitters; A4280B Spatial filters, zone plates, and polarizers; B7260F Display equipment and systems; B4150D Liquid crystal devices  
CT **LIQUID CRYSTAL DISPLAYS**; **LIQUID CRYSTAL ON SILICON**; **OPTICAL BEAM SPLITTERS**; **OPTICAL POLARISERS**; **OPTICAL PROJECTORS**  
ST optical engine; plastic film; projection display; 3M **polarizing beam splitter**; LCOS projector; liquid crystal on silicon; **highly reflective quarter-wave stack**
- L75 ANSWER 26 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 1030358208 JICST-EPlus  
TI Information technology and polymer materials. Flat panel display (3). No.11.  
AU IDE FUMIO  
SO Kogyo Zairyo (Engineering Materials), (2003) vol. 51, no. 6, pp. 84-85. Journal Code: F0172A (Fig. 1, Tbl. 1, Ref. 1)  
CODEN: KZAIAS; ISSN: 0452-2834  
CY Japan

DT Journal; Commentary  
 LA Japanese  
 STA New

AB For information terminal equipment represented by portable telephone, light weight, small size and crack-resistance are required. As basic materials, plastic materials are attracting attention in place of inorganic glass. Performance required for the basic material is mentioned. The following engineering plastic transparent resins are examined as materials for film substrate: PC, polyarylate, polyethersulfone, and hardened epoxy resin. Since LCD has no light emission ability by itself, back light system has been adopted. The basic structure of back light panel is composed of light guiding layer, diffusion layer, and reflecting layer. Since light transmission is important for a light guiding board, it is composed of PMMA board with excellent transparency.

CC NC06030Q (621.385:621.397)

CT flat panel display; terminal equipment; portable telephone; liquid crystal display; transparent material; polycarbonate; polyarylate; plastic film; epoxy resin; refractive index; tensile strength; polyethersulfone; thermal expansion coefficient; glass transition point; water absorption rate; backlight; polymethyl methacrylate; optical transmission; substrate(plate); packaging; property  
 BT display device; equipment; mobile communication; telecommunication; telephone; voice communication; material; polymer; thermoplastic; plastic; aromatic polyester; polyester; thermosetting plastic; ratio; mechanical property; strength; polyether; polysulfone; sulfur-containing polymer; hetero-atom containing polymer; expansion coefficient; coefficient; transition temperature; temperature; thermodynamic property; lighting fitting; utensil; lighting unit; facility; polyalkyl methacrylate; polymethacrylate; acrylic resin; electromagnetic wave transmission; transmission(propagation); plate classified by application; plate(material)  
 ST PDA; gas barrier property

L75 ANSWER 27 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN

AN 2004(10):8077 COMPENDEX

TI Three-dimensional display with volume/space expansion.

AU Okamoto, Masaaki (Takarazuka Univ. of Art and Design Tsutsuji-oka Hanayashiki, Takarazuka 665-0803, Japan); Komatsu, Kumiko; Kajiki, Yoshinori; Shimizu, Eiji

MT Three-Dimensional TV, Video, and Display II.

MO SPIE

ML Orlando, FL, United States

MD 10 Sep 2003-11 Sep 2003

SO Proceedings of SPIE - The International Society for Optical Engineering v 5243 2003.p 7-18

CODEN: PSISDG ISSN: 0277-786X

PY 2003

MN 62321

DT Conference Article

TC Theoretical; Experimental

LA English

AB The authors developed a simple stereoscopic display using the characteristic of inclined polarization of existing LCD panels. The production time of this display is very short and the cost is low price. The screen size of this display becomes about half of the LCD panel. Thus the stereoscopic images are displayed on the slightly small screen. Therefore several distortions often appear as puppet theater effect and cardboard effect. The researchers have not been able to provide the satisfactory solutions to these distortions. The

authors propose a geometrical model to describe the relation between the real space of the recording time and the virtual space of the replay time. This model is mainly related to the reduction or the magnification about the screen size and the distance of a pair of cameras. The authors could improve the distortions by considering these conditions. Moreover the authors succeeded in improving 3D images more vividly. The essential point is the construction of multiple **layered** virtual images. The authors call this complex image "sur-virtual image". In this way the volume of the expressed object and the scale of the virtual space can be easily expanded. The viewer can enjoy more exciting 3D images. 16 Refs.

CC 722.2 Computer Peripheral Equipment; 723.2 Data Processing; 716.4 Television Systems and Equipment; 741.3 Optical Devices and Systems; 741.1 Light. Optics; 743 Holography  
 CT **\*Liquid crystal displays; Light reflection;**  
 Holograms; Glass; Optical projectors; Light **polarization**; Image processing; Image recording; Mirrors  
 ST Disparity; Image distortion; Parallax; Puppet theater effect  
 ET D

L75 ANSWER 28 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2002:450021 HCAPLUS

DN 136:409175

ED Entered STN: 14 Jun 2002

TI **Liquid crystal** information **displays** with improved brightness and contrast

IN Lazarev, Pavel I.

PA Optiva, Inc., USA

SO PCT Int. Appl., 10 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM G02F001-1336

CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002046836	A2	20020613	WO 2001-US46675	20011205
	WO 2002046836	A3	20030116		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	RU 2225025	C2	20040227	RU 2000-130482	20001206
	US 2002105608	A1	20020808	US 2001-6166	20011204
	AU 2002025935	A5	20020618	AU 2002-25935	20011205
	EP 1340117	A2	20030903	EP 2001-995377	20011205
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2004515807	T2	20040527	JP 2002-548508	20011205
PRAI	RU 2000-130482	A	20001206		
	US 2001-6166	A	20011204		
	WO 2001-US46675	W	20011205		

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

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 WO 2002046836 ICM G02F001-1336  
 WO 2002046836 ECLA G02F001/1335A  
 US 2002105608 NCL 349/096.000  
 ECLA G02F001/1335A  
 JP 2004515807 FTERM 2H091/FA11Y; 2H091/FB02; 2H091/FD10; 2H091/FD14;  
 2H091/HA07; 2H091/HA10; 2H091/LA03; 2H091/LA11;  
 2H091/LA12; 2H091/LA13; 2H091/LA20

AB The invention pertains to information **displays**, in particular to **liquid-crystal (LC) displays** that can be used in indicatory devices of various types as well as in optical modulators, matrix systems of light indication, etc. The LC information **display** contains a **layer of liquid crystal** situated between the **front** and the **rear panels** with functional **layers**, and the liquid crystal has parameters providing **interference maximum** or **min** . of **transmission** of **reflection** at the exit of the display and/or at the boundary of at least two functional **layers** and/or between the LC **layer** and a functional **layer**, for at least one linearly polarized component of light, and for at least one wavelength. The tech. result of the declared invention is the enhancement of brightness and contrast of the image, especially for the light traveling normal to the surface of the display, decrease of thickness and simplification of the display design due to optimization of all or at least several functional **layers** and elements of the display and also due to incorporation of several functions in single **layer**, the decrease in losses and enhancement of optical characteristics of the display. Use of the declared invention allows optimizing transmission of light through optically anisotropic functional **layers** of the display, which leads to substantial increase of its effectiveness.

ST **liq crystal** information **display** brightness contrast

IT **Liquid crystal displays**  
 (liquid crystal information **displays** with improved brightness and contrast)

L75 ANSWER 29 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:929420 HCAPLUS

DN 142:186715

ED Entered STN: 04 Nov 2004

TI Reflective FFS-LCD showing improved reflectivity

IN Hong, Seung Ho; Lee, Seung Hui

PA Hyundai Display Technology Inc., S. Korea

SO Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DT Patent

LA Korean

IC ICM G02F001-133

CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and Other Reprógraphic Processes)

Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2002002589	A	20020110	KR 2000-36804	20000630
PRAI	KR 2000-36804		20000630		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
KR 2002002589	ICM	G02F001-133

AB A reflective FFS-LCD (Fringe Field Switching mode Liquid Crystal Display) is provided to obtain the max reflectivity without regard to transmissivity of a reflective FFS-LCD by keeping a screen white when an elec. field is off, and driving an LCD in a normally white mode if an elec. field is on. A lower substrate is arranged opposite to an upper substrate with a cell gap. A counter electrode and a pixel electrode are formed inside the lower substrate to form a fringe field. The counter electrode and the pixel electrode are formed by metal films having high reflectivity. An LC layer having pos. dielec. anisotropy is formed between the lower substrate and the upper substrate. The LC layer adjusts phase retardation, the multiplication anisotropy in refractive index and a distance between the upper and lower substrates to be used as a half wave plate. Plural parallel alignment layers are formed between the inside of the lower substrate and the LC layer and between the inside of the upper substrate and the LC layer resp. Each parallel alignment layer has an anti-parallel rubbing axis. Each alignment layer is rubbed to have a specific angle between each rubbing axis and the substrate transmitting line of a fringe field. A polarizer is adhered to the outside of the upper substrate and has an angle of 10-40°, preferably 22.5° with the rubbing axis. A quarter wave plate is arranged outside the lower substrate to polarize incident or reflected beam by a quarter wave. A reflecting plate is formed outside the quarter wave plate to polarize the transmitted beam of the quarter wave plate at 180°.

ST reflective fringe field switching liq crystal display FFS LCD

IT Liquid crystal displays  
(reflective FFS-LCD showing improved reflectivity)

L75 ANSWER 30 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2002:802278 HCAPLUS  
 DN 137:331153  
 ED Entered STN: 23 Oct 2002  
 TI Color correcting material for light-transmitting materials used on transparent electrode substrate of touch panels  
 IN Morimoto, Yoshihiro; Yoshioka, Kensuke  
 PA NOF Corporation, Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM B32B007-02  
 ICS C09K003-00; G02B001-10; G02B005-22; G06F003-033  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002307594	A2	20021023	JP 2001-118010	20010417
PRAI	JP 2001-118010		20010417		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2002307594	ICM	B32B007-02
	ICS	C09K003-00; G02B001-10; G02B005-22; G06F003-033

AB The title material has a color correcting layer on a transparent film and has 400-500 nm of maximum light-transmitting wavelength in 300-800 nm and ≥90 % maximum light transmittance. The color

correcting material provides right color of the display panel under the touch panel.

ST color correcting **light transmitting** transparent electrode substrate touch panel

IT **Liquid crystal displays**  
Optical imaging devices  
(Color correcting material for **light-transmitting** materials used on transparent electrode substrate of touch panels)

IT Optical instruments  
(color correcting film; Color correcting material for **light-transmitting** materials used on transparent electrode substrate of touch panels)

IT Electric contacts  
(touch panels; Color correcting material for **light-transmitting** materials used on transparent electrode substrate of touch panels)

IT 372967-44-7P 473444-63-2P  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(Color correcting material for **light-transmitting** materials used on transparent electrode substrate of touch panels)

IT 27775-58-2P, Tetramethylolmethane triacrylate homopolymer  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(color correcting **layer**; Color correcting material for **light-transmitting** materials used on transparent electrode substrate of touch panels)

IT 7631-86-9, XBA ST, uses 13463-67-7, Titanium oxide, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(color correcting **layer**; Color correcting material for **light-transmitting** materials used on transparent electrode substrate of touch panels)

IT 9011-87-4, Delaglas A  
RL: DEV (Device component use); USES (Uses)  
(color correcting material substrate; Color correcting material for **light-transmitting** materials used on transparent electrode substrate of touch panels)

L75 ANSWER 31 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN DUPLICATE 1  
AN 2003(34):7457 COMPENDEX  
TI Measurement and modeling of optical performance of wire grids and **liquid-crystal displays** utilizing grid **polarizers**.

AU Sergan, Tatiana (Liquid Crystal Institute Kent State University, Kent, OH 44242, United States); Lavrentovich, Marina; Kelly, Jack; Gardner, Eric; Hansen, Douglas

SO Journal of the Optical Society of America A: Optics and Image Science, and Vision v 19 n 9 September 2002 2002.p 1872-1885  
CODEN: JOAOD6 ISSN: 1084-7529

PY 2002  
DT Journal  
TC Theoretical; Experimental  
LA English  
AB We studied the optical performance of a reflective wire-grid **polarizer** designed for visible **light**. The **polarizer** reflects E polarization and transmits H polarization with low losses. The studies of transmission and reflectivity of nonpolarized and **polarized** light from single grids and stacked grids show that the optical performance of wire-grid **polarizers** can be adequately described

by representing the **polarizer** as an effective uniaxial medium with anisotropic absorption. The description facilitates the incorporation of the **polarizers** in modeling procedures widely used in the design of liquid-crystal devices. We present the modeling and measurement results of twisted-nematic devices with wire-grid **polarizers** serving simultaneously as reflective **polarizers**, alignment **layers**, and back electrodes. The application of wire-grid **polarizers** for reflective liquid-crystal devices provides **brightness** enhancement, high **contrast** ratio at wide viewing angles, and elimination of viewing parallax. \$CPY 2002 Optical Society of America. 23 Refs.

CC 741.3 Optical Devices and Systems; 741.1 Light. Optics; 704.1 Electric Components

CT **\*Liquid crystal displays**; Light **polarization**;  
Electrodes; **Light reflection**; Light transmission

ST Reflective **polarizers**

ET H

L75 ANSWER 32 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN

AN 2002(42):798 COMPENDEX

TI The significance of reflection reduction in a TN display for colour visualisation.

AU Olifierczuk, Marek (Institute of Applied Physics Military University of Technology, 00-908 Warsaw, Poland); Zielinski, Jerzy

MT XIV Conference on Liquid Crystals: Chemistry, Physics, and Applications.

MO State Committee for Scientific Research; SPIE

ML Zakopane, Poland

MD 03 Sep 2001-07 Sep 2001

SO Proceedings of SPIE - The International Society for Optical Engineering v 4759 2002.p 418-422

CODEN: PSISDG ISSN: 0277-786X

PY 2002

MN 59841

DT Conference Article

TC Theoretical; Experimental

LA English

AB This paper contains the results of theoretical considerations about light propagation through the real TN display working in reflective and negative mode. This mode provides us with a possibility to obtain a colour image. We have done mathematical and numerical analyses of a propagation of light wave through LC displays with antireflective **layer**, glass planes, conductive **layers**, liquid crystal **layer** and **polarizers**. We have taken into account real conditions of a display operation, i.e. spectral properties of all components, optical anisotropic and dichroic properties of LC **layer**, reflections from all phase borders and also spectral characteristics of light source and sensitivity of human eye. 8 Refs.

CC 741.3 Optical Devices and Systems; 804.1 Organic Components; 931.2 Physical Properties of Gases, Liquids and Solids; 741.1 Light. Optics; 711.1 Electromagnetic Waves in Different Media; 921.6 Numerical Methods

CT **\*Liquid crystal displays**; Light **polarization**; Vision;  
Light sources; Image quality; Numerical analysis; Nematic liquid crystals; Color; **Light reflection**; Visualization; Light propagation; Image processing; Mathematical models

ST Color visualization; Twisted nematic; Negative mode; **Contrast** ratio; Computer modelling

ET N\*T; TN; T cp; cp; N cp

L75 ANSWER 33 OF 96 JICST-Eplus COPYRIGHT 2005 JST on STN

AN 1020165264 JICST-Eplus

TI Undercoat Film for Reflective LCDs.  
 AU TSURUOKA YASUO; SHIMAZAKI TOSHIKATSU; YOSHIDA TAKESHI  
 CS Hitachi Chemical Co., Ltd., JPN  
 SO Hitachi Kasei Tekunikaru Repoto (Hitachi Chemical Technical Report),  
 (2002) no. 38, pp. 15-18. Journal Code: X0860A (Fig. 7, Ref. 3)  
 ISSN: 0288-8793  
 CY Japan  
 DT Journal; Article  
 LA Japanese  
 STA New  
 AB Reflective color LCDs have a built-in diffuse reflecting substrate with a  
 fine rugged surface to randomly reflect and scatter the incident light in  
 order to produce a clear picture. The main challenges in designing for  
 such LCDs reflectors are how to improve **light reflecting**  
 efficiency and prevent **light interference**. We  
 investigated these problems from the material and manufacturing-process  
 point of view and developed new undercoat film for reflectors. This film  
 has an optimally designed and controlled uneven surface that provides  
 seamless and stable reflectors with excellent reflection properties.  
 Reflectors can be easily produced by mounting the film on LCD substrates  
 and evaporating the metal **layer** on the film. (author abst.)  
 CC NC06030Q; YH06080T (621.385:621.397; 678.06+)  
 CT **liquid crystal display**; plastic film; reflection; laminate  
 structure; surface quality; electron micrography; exposure(photography);  
 firing(heat treatment); backing material; laminated material  
 BT display device; equipment; multistory structure; structure;  
 photomicrography; photography; heat treatment; treatment; material  
 ST laminate film

L75 ANSWER 34 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN  
 AN 2002(37):329 COMPENDEX  
 TI Electrically tunable color for full-color reflective displays.  
 AU Li, Zili (Motorola Advanced Technology Center Motorola Labs, Schaumburg,  
 IL, United States); Desai, Pankaj; Akins, Rob; Ventouris, George;  
 Voloschenko, Dmitry  
 MT Liquid Crystal Materials, Devices and Applications VI.  
 MO IS and T; SPIE  
 ML San Jose, CA, United States  
 MD 26 Jan 1998-27 Jan 1998  
 SO Proceedings of SPIE - The International Society for Optical Engineering v  
 4658 2002.p 7-13  
 CODEN: PSISDG ISSN: 0277-786X  
 PY 2002  
 MN 59551  
 DT Conference Article  
 TC Theoretical; Experimental  
 LA English  
 AB Conventional reflective displays based on either color filter/  
**polarizer** or stacked color **layers** suffer from its  
 marginal performance in terms of **brightness**, color, and cost. In  
 this paper, we will present new full-color reflective display  
 architecture: Electrically Tunable Color (ETC). In this display  
 architecture, both color generation and its change are through the  
 coupling of a cholesteric liquid crystal in its planar state and an  
 in-plane electric field. Unlike the conventional cholesteric  
**liquid crystal display**, in which one  
**liquid crystal layer** only reflects one preset  
 color, in ETC the in-plane field that is predominantly normal to the helix  
 unwinds the helix to result a color shift from its initial color. We have  
 fabricated such devices in our laboratory and demonstrated large color

change covering all three primary colors with a single ETC pixel. Another advantage of ETC is its faster time response. Time response data will be presented and compared with model. Switching voltages depend much on cell parameters, in particular on the electrode configuration. Measured switch voltage vs. these parameters will be shown and challenging issue in voltage reduction will be discussed. Finally, we will propose full-color display architectures based on ETC and analyze their cost/performance. 13 Refs.

CC 741.3 Optical Devices and Systems; 804 Chemical Products Generally; 741.1 Light. Optics; 701.1 Electricity: Basic Concepts and Phenomena  
CT \*Liquid crystal displays; Light reflection;  
Electric fields; Color; Tuning; Cholesteric liquid crystals  
ST Reflective displays

L75 ANSWER 35 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2001:431865 HCAPLUS

ED Entered STN: 14 Jun 2001

TI Liquid crystal display with black matrix of low reflectivity

IN Choi, Sang Un; Kim, Youn Joo

PA S. Korea

SO U.S. Pat. Appl. Publ.

CODEN: USXXCO

DT Patent

LA English

IC ICM G02F001-13

ICS G02F001-1335; G02B005-20

INCL 349001000; 430007000

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2001003470	A1	20010614	US 2000-727555	20001201
	KR 2001054927	A	20010702	KR 1999-55923	19991208
PRAI	KR 1999-55923	A	19991208		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 20010003470	ICM	G02F001-13
	ICS	G02F001-1335; G02B005-20
	INCL	349001000; 430007000
US 2001003470	NCL	349/001.000
	ECLA	G02F001/1335F1

AB Disclosed is a liquid crystal display (LCD) with black matrixes of low reflectivity capable of reducing the reflection of back light. The black matrix of the disclosed LCD includes a photoshield layer formed on the back surface of a front substrate, and at least one internal photo-interference layer formed over the photoshield layer. The internal photo-interference layer has a refraction index different from that of the photoshield layer. The internal photo-interference layer has a double-layer structure consisting of a chromium nitride layer and a chromium oxide layer.

L75 ANSWER 36 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2001:336543 HCAPLUS

DN 134:318814

ED Entered STN: 11 May 2001

TI Color filter for liquid crystal display

IN Nagata, Eriko; Ito, Hiromitsu; Hosono, Tadashi; Hagiwara, Hidesato;

Sugiura, Takeo  
 PA Toppan Printing Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 12 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G02B005-20  
 ICS G02B005-32; G02F001-1335  
 CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 73

## FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001124920	A2	20010511	JP 1999-305683	19991027
JP 1999-305683		19991027		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2001124920	ICM	G02B005-20
	ICS	G02B005-32; G02F001-1335

AB In the color filter having  $\geq 2$  color **layers** having different spectral characteristics, the color **layer** contains a Cu phthalocyanine dye and a dioxazine violet dye.  $\geq 80\%$  Of the Cu phthalocyanine dye is made from C.I.Pigment Blue 15:6. The dioxazine violet dye 3-7% on the basis of the total amount of the dyes is made from C.I.Pigment Violet 23. The reflection of the color **layer** is wavelength-selective having the **maximum reflection wavelength** in 570-600 nm.

ST color filter **liq crystal display**IT **Liquid crystal displays**

Optical filters

(color filter for **liquid crystal display**)

IT 147-14-8, Lionol Blue ES 4051-63-2, C.I.Pigment Red 177 14302-13-7,  
 C.I.Pigment Green 36 25157-64-6, C.I.Pigment Yellow 150 84632-65-5,  
 C.I.Pigment Red 254 215247-95-3, Lionogen Violet RL

RL: DEV (Device component use); USES (Uses)

(color filter for **liquid crystal display**)

L75 ANSWER 37 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2001:284336 HCAPLUS

DN 134:287998

ED Entered STN: 22 Apr 2001

TI Laminate type **liquid crystal display** device

IN Okada, Masakazu

PA Minolta Camera Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G02F001-1347

ICS G02F001-1333; G02F001-1335

CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and  
 Other Reprographic Processes)

Section cross-reference(s): 75

## FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001109012	A2	20010420	JP 2000-230464	20000731
JP 3493454	B2	20040203		

US 6597419 B1 20030722 US 2000-605457 20000628  
 PRAI JP 1999-220557 A 19990803  
 JP 1999-189334 A 19990702

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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JP 2001109012	ICM	G02F001-1347
	ICS	G02F001-1333; G02F001-1335
US 6597419	NCL	349/104.000; 349/074.000; 349/106.000
	ECLA	G02F001/1347A2; G02F001/137C

AB The device, comprising laminated liquid crystal layers each of which contains cholesteric liquid crystal showing selective **reflection wavelength** peak and sandwiched between a pair of substrates, is characterized by (1) each of the liquid crystal layer at the viewing side has smaller selective **reflection wavelength**, **reflection** peak half width, and peak reflectivity than these of its adjacent layer, and (2) the color position of the XYZ color coordinate at the state of **maximum reflection** of the all the layers is within 0.02 distance from the standard white dot position. The device may have blue, green, and red liquid crystal layers successively from the viewing side. The device shows improved light efficiency, less color variation in various viewing angle, and gives images with good color balance.

ST laminate cholesteric liq crystal device; **reflection wavelength** half width liq crystal device

IT **Liquid crystals**  
 (cholesteric; laminate type liquid crystal display device containing cholesteric liquid crystals)

IT **Liquid crystal displays**  
 (reflection; laminate type liquid crystal display device containing cholesteric liquid crystals)

L75 ANSWER 38 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2001:225449 HCAPLUS

DN 134:259288

ED Entered STN: 30 Mar 2001

TI Reflector, reflection-type polarizing plate, and the liquid crystal display using it

IN Hayashi, Shigetoshi; Hayashi, Hideki

PA Sumitomo Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G02B005-02

ICS G02B005-08; G02F001-1335; G09F009-00

CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001083308	A2	20010330	JP 2000-206302	20000707
PRAI JP 1999-196037	A	19990709		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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JP 2001083308	ICM	G02B005-02
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ICS G02B005-08; G02F001-1335; G09F009-00

AB In the reflector comprising a support successively coated with 1st mixture **layer** containing fine particles and a resin, a metal **layer**, and 2nd mixture **layer** containing particles and a resin, reflection angle-dependence curve of **reflected light** strength shows **maximum** at the angle  $\geq 5^\circ$  different from the ordinal reflection angle. The polarizing plate comprises a polarizer formed on the reflector. In the reflection-type **liquid crystal display** device, the reflector or the polarizing plate is formed on the rear side of the liquid crystal cell. Clear images without moire are observed from wide viewing angle.

ST reflector reflection angle **liq crystal display**  
; polarizer **liq crystal display**

IT Silsesquioxanes  
RL: DEV (Device component use); USES (Uses)  
(Me, Tospearl 120; reflector and reflection-type polarizing plate for **liquid crystal display**)

IT **Liquid crystal displays**  
(reflection; reflector and reflection-type polarizing plate for **liquid crystal display**)

IT Optical reflectors  
Polarizers  
(reflector and reflection-type polarizing plate for **liquid crystal display**)

IT Acrylic polymers, uses  
RL: DEV (Device component use); USES (Uses)  
(reflector and reflection-type polarizing plate for **liquid crystal display**)

IT 9003-53-6, Polystyrene  
RL: DEV (Device component use); USES (Uses)  
(bead; reflector and reflection-type polarizing plate for **liq crystal display**)

L75 ANSWER 39 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 1020058585 JICST-EPlus

TI A New Design of Optical Configuration of Transflective **Liquid Crystal Displays** using Antiferroelectric **Liquid Crystals** and Frustelectric Ferroelectric Liquid Crystals.

AU PARK W S; KIM S-C; LEE S-H; HWANG Y S; LEE G-D; YOON T-H; KIM J C

CS Pusan National Univ., Pusan, Kor

SO Jpn J Appl Phys Part 1, (2001) vol. 40, no. 11, pp. 6654-6657. Journal

Code: G0520B (Fig. 7, Ref. 8)

ISSN: 0021-4922

CY Japan

DT Journal; Article

LA English

STA New

AB We propose an optical configuration of transflective antiferroelectric liquid crystal (AFLC) and frustelectric ferroelectric liquid crystal (FR-FLC) display modes using a half-wave LC cell in which the in-plane tilt angel is 22.5.DEG.. It is composed of two **polarizers**, an AFLC or FR-FLC cell, two achromatic quarter-wave films, and a transflective film **layer**. In the case of using it in the reflective mode, it provides a high brightness and a high contrast ratio, and in the case of using it in the transmissive mode, it also provides a high contrast ratio. By fabricating modes of a transflective **liquid crystal display** (LCD) with a half-wave retardation, we demonstrated high brightness as well as high contrast ratio of a half-wave by the commercial simulator (DIMOS). (author abst.)

CC NC06030Q; BK03020W (621.385:621.397; 544.252.22)

- CT ferroelectric liquid crystal; nematic phase; **liquid crystal display**; optimum design; **polarizer**(light); rubbing; diffuse reflection; phase shift; luminance; contrast; voltage dependence; phase transition; Poincare sphere; optical reflection; optical transmission; wavelength dependence; visual field
- BT liquid crystal; mesophase; phase(thermodynamics); ferroelectrics; dielectrics; dielectric material; material; display device; equipment; design; optical element; optical system; surface treatment; treatment; reflection; variation; photometric quantity; dependence; spherical surface; quadric surface; curved surface; face; electromagnetic **wave reflection**; electromagnetic wave transmission; transmission(propagation)
- L75 ANSWER 40 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
 AN 1010734000 JICST-EPlus  
 TI Measurements of Cell Thickness Distributions in Reflective Liquid Crystal Cells Using a Two-Dimensional Stokes Parameter Method.  
 AU KAWAMURA M; SATO S  
 CS Akita Univ., Akita, Jpn  
 SO Jpn J Appl Phys Part 2, (2001) vol. 40, no. 6B, pp. L621-L624. Journal Code: F0599B (Fig. 8, Ref. 7) ISSN: 0021-4922  
 CY Japan  
 DT Journal; Short Communication  
 LA English  
 STA New  
 AB A two-dimensional(2D) Stokes parameter method for measuring the cell properties of reflective liquid crystal(LC) cells is proposed. Relationships between the Stokes parameters of the **reflected light** from the **reflective** LC cell and the thickness of the LC **layer** are given by Jones matrix representation. The hyperfine cell thickness distributions can be determined by measuring Stokes parameters of the LC cell and solving Stokes parameter equations. Moreover, these values are discussed and compared with those of the transmissive-type LC cell. (author abst.)
- CC BK03010L; BD07050K (544.25; 535.51.08:681.785.3)  
 CT Jones matrix; Stokes parameter; **liquid crystal display**; liquid crystal; device structure; thickness of strata; distribution function; thickness measurement; optical reflection; **polarimetry** (measurement)
- BT matrix(mathematics); algebraic system; parameter; **polarization** property; optical property; display device; equipment; mesophase; phase(thermodynamics); thickness; length; geometric quantity; function(mathematics); mapping(mathematics); length measurement; measurement; electromagnetic **wave reflection**; reflection; optical measurement
- L75 ANSWER 41 OF 96 INSPEC (C) 2005 IEE on STN  
 AN 2001:7115935 INSPEC DN A2002-02-4270D-002; B2002-01-4150D-021  
 TI Optical properties of diffusion-type cholesteric liquid crystalline polymer film.  
 AU Shiozawa, A.; Nishimura, S.; Suzuki, S.; Komatsu, S.; Ookubo, T.; Kobori, Y. (Central Tech. Res. Lab., Nippon Mitsubishi Oil Corp., Yokohama, Japan)  
 SO Molecular Crystals and Liquid Crystals (2001) vol.364, p.469-78. 5 refs. Published by: Gordon & Breach  
 CODEN: MCLCE9 ISSN: 1058-725X  
 SICI: 1058-725X(2001)364L:469:OPDT;1-A  
 Conference: 18th International Liquid Crystal Conference. Sendai, Japan, 24-28 July 2000  
 DT Conference Article; Journal

TC Application; Experimental  
CY Switzerland  
LA English

AB In the application of cholesteric liquid crystal (CLC) polymer films to mono-color **polarizers**, diffusive reflection is preferred rather than mirror reflection at the point of visibility. This led us to develop a diffusion-type CLC (D-CLC) film. The newly developed D-CLC film exhibits high circular dichroism with **bright** color reflection that can be observed from almost all directions. The **layer** structure of the D-CLC film was directly confirmed by analysis with transmission electron microscopy (TEM). It was found that the diffusive property and **polarization** of the **reflected light** are mainly affected by the **layer** structure of the D-CLC.

CC A4270D Liquid crystals (optical materials); A4280B Spatial filters, zone plates, and polarizers; A6130E Experimental determinations of smectic, nematic, cholesteric, and lyotropic structures; A6815 Liquid thin films; A7820F Birefringence (condensed matter); B4150D Liquid crystal devices; B7260B Display materials; B7260D Display characteristics

CT CHOLESTERIC LIQUID CRYSTALS; CIRCULAR DICHROISM; LIGHT **POLARISATION; LIQUID CRYSTAL DISPLAYS**  
; LIQUID CRYSTAL POLYMERS; LIQUID FILMS; OPTICAL **POLARISERS**;  
TRANSMISSION ELECTRON MICROSCOPY

ST diffusion-type CLC film; optical properties; **mono-color polarizers**  
; cholesteric liquid crystal polymer film; diffusive reflection; circular dichroism; **bright color reflection; layer structure**;  
transmission electron microscopy; TEM; **reflected light**  
**polarization**; display device; **polarization coefficient**

ET In; D

L75 ANSWER 42 OF 96 INSPEC (C) 2005 IEE on STN

AN 2002:7264591 INSPEC DN B2002-06-7260D-015

TI A reflective vertically aligned AMLCD for LCOS.

AU Ullmann, J.; Lueder, E. (Univ. of Stuttgart, Germany)

SO ITG-Fachbericht (2001) no.165, p.381-3. 3 refs.

Published by: VDE-Verlag

CODEN: ITGFEY ISSN: 0932-6022

SICI: 0932-6022(2001)165L:381:RVAA;1-A

Conference: 9th Triennial Conference of the ITG-Chapter 8.6 "Vacuum Electronics and Displays". Garmisch-Partenkirchen, Germany, 2-3 May 2001

DT Conference Article; Journal

TC Practical; Experimental

CY Germany, Federal Republic of

LA English

AB In the ESPRIT project MOSAREL (MONocrystalline Silicon Active matrix **REflective Light** valve) a **reflective** microdisplay on silicon with 2560 by 2048 pixels is being developed. This display is used in a projection system with **polarizing beam splitter**. A vertically aligned display offers best **contrast** ratio in such a projection system. In this paper we show a new and easy approach to achieve this vertical alignment with obliquely sputtered SiO<sub>2</sub> as an alignment **layer**.

CC B7260D Display characteristics; B4150D Liquid crystal devices; B0520B Sputter deposition

CT **LIQUID CRYSTAL DISPLAYS**; SPUTTERED COATINGS

ST reflective vertically aligned AMLCD; LCOS microdisplay; ESPRIT project; MOSAREL; **monocrystalline silicon active matrix reflective light valve**; projection system; **polarizing beam splitter**;  
**contrast ratio**; **obliquely sputtered SiO<sub>2</sub> alignment layer**  
; 2560 pixel; 2048 pixel; SiO<sub>2</sub>; Si

CHI SiO<sub>2</sub> bin, O<sub>2</sub> bin, Si bin, O bin; Si el

PHP picture size 2.56E+03 pixel; picture size 2.048E+03 pixel  
 ET In; O\*Si; SiO<sub>2</sub>; Si cp; cp; O cp; Si; SiO; O

L75 ANSWER 43 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN

AN 2002(51):4601 COMPENDEX

TI High **contrast** tri-layer guest-host liquid crystal display with a quarter-wave plate reflector.

AU Takeda, K. (IBM Research Tokyo Research Laboratory, Yamato, Kanagawa 242-8502, Japan); Matsumoto, K.; Sueoka, K.; Hasegawa, M.; Taira, Y.; Romankiw, L.T.

MT Asia Display/IDW 2001.

ML Nagoya, Japan

MD 16 Oct 2002-19 Oct 2002

SO SID Conference Record of the International Display Research Conference 2001.p 293-296  
 ISSN: 1083-1312

PY 2001

MN 60357

DT Conference Article

TC Theoretical; Experimental

LA English

AB We have developed a novel technology for a three-layer color reflective display with high **contrast** ratio and high reflectivity. In this scheme each guest-host liquid crystal layer is homogeneously aligned and a wide band quarter-wave plate is placed between the bottom reflector and the liquid crystal cell. With this new scheme we obtained a reflectivity of 65% and a 15:1 **contrast** ratio. 14 Refs.

CC 722.2 Computer Peripheral Equipment; 933 Solid State Physics; 804 Chemical Products Generally; 803 Chemical Agents; 741.1 Light. Optics

CT \*Liquid crystal displays; Band structure; Light polarization; Liquid crystals; Dyes

ST Guest-host liquid crystal display (GH-LCD)

L75 ANSWER 44 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN

AN 2002(51):4595 COMPENDEX

TI New reflective LCDs using a single-polarizer double-layered TN-LCD and film TN-LCD with a quarter-wave plate.

AU Fukuda, Ichiro (O.E. Device System R and D Center Kanazawa Institute of Technology, Nonoichi, Ishikawa 921-8501, Japan); Koshida, Yoshinori; Izo, Takashi; Sakamoto, Yasutada

MT Asia Display/IDW 2001.

ML Nagoya, Japan

MD 16 Oct 2002-19 Oct 2002

SO SID Conference Record of the International Display Research Conference 2001.p 269-272  
 ISSN: 1083-1312

PY 2001

MN 60357

DT Conference Article

TC Theoretical

LA English

AB High quality, **lightweight** reflective color LCDs with low power consumption are important devices for highly functional information terminals. In this paper, we numerically analyze the electro-optical properties of new achromatic reflective LCDs that use a single-polarizer double-layered TN-LCD and film TN-LCD with a quarter-wave plate. We found that the display modes can exhibit a high **contrast** ratio of infinity in theory and a high luminous

reflectance of about 50% through optimum design of the device parameters.  
7 Refs.

CC 722.2 Computer Peripheral Equipment; 741.3 Optical Devices and Systems;  
741.1 Light. Optics; 714.2 Semiconductor Devices and Integrated Circuits

CT **\*Liquid crystal displays; Light polarization;**  
**Light reflection; Thin films; Electrooptical devices**

ST Quarter wave plates

ET N\*T; TN; T cp; cp; N cp

L75 ANSWER 45 OF 96 INSPEC (C) 2005 IEE on STN

AN 2001:7088397 INSPEC DN A2001-24-4280B-001; B2001-12-7260F-005

TI **Polarization** and color separator using binary phase grating with  
subwavelength period.

AU Omori, S. (Osaka Sci. & Technol. Center, Japan)

SO Optical Review (July-Aug. 2001) vol.8, no.4, p.254-9. 7 refs.  
Published by: Opt. Soc. Japan  
CODEN: OPREFN ISSN: 1340-6000  
SICI: 1340-6000(200107/08)8:4L.254:PCSU;1-N  
Conference: 2nd International Conference on Optical Design and Fabrication  
(ODF2000). Tokyo, Japan, 15-17 Nov 2000

DT Conference Article; Journal

TC Theoretical; Experimental

CY Japan

LA English

AB A data projector using three **liquid crystal display panels** has a complex optical system. The illuminating optics separate the beam from a light source into three primary colors and separate those into opposite **polarization** by using multi-layer films and prisms. A reflection grating with a period of subwavelength has high diffraction efficiency for **p polarized light** and high regularly **reflectance** for **y polarized light**. The diffraction angle of a grating largely depends on the wavelength, because a diffractive optical element (DOE) has large chromatic dispersion. The grating with the period of subwavelength can separate white light into color components using its chromatic dispersion simultaneously. The grating makes the optical system simpler and smaller than those with conventional devices. In this paper the efficiency of **polarization** separation from the grating is calculated by a rigorous analytical method. Next, the condition for color separation is calculated by Snell's law, and an optical system using a grating that performs **polarization** and color separation is proposed. Experimental results of the DOE fabricated are well matched with those of this simulation.

CC A4280B Spatial filters, zone plates, and polarizers; A4280G Optical prisms and projection systems; A4280F Gratings, echelles; A4215E Optical system design; B7260F Display equipment and systems; B4150D Liquid crystal devices

CT COLOUR; DIFFRACTION GRATINGS; DIFFRACTIVE OPTICAL ELEMENTS; **LIQUID CRYSTAL DISPLAYS**; OPTICAL DESIGN TECHNIQUES; OPTICAL MULTILAYERS; OPTICAL **POLARISERS**; OPTICAL PROJECTORS

ST color separator; binary phase grating; subwavelength period; **polarization separator; liquid crystal display panels**; complex optical system; illuminating optics; light source; primary colors; **opposite polarization; multi-layer films; prisms**; reflection grating; high diffraction efficiency; **p polarized light**; high regularly reflectance; **y polarized light**; diffraction angle; large chromatic dispersion; white light; color components; chromatic dispersion; rigorous analytical method; color separation; Snell's law; optical system; grating

L75 ANSWER 46 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN  
 AN 2001(23):2275 COMPENDEX  
 TI Optimization of "guest-host" liquid crystal display.  
 AU Chigrinov, V.G. (Shubnikov Inst. of Crystallography Russian Academy of Sciences, 117 333, Moscow, Russian Federation); Simonenko, G.V.  
 MT 5th European Conference on Liquid Crystals (ECLC 99).  
 ML Crete, Greece  
 SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals v 351 2001.p 51-59  
 CODEN: MCLCE9 ISSN: 1058-725X  
 PY 2001  
 MN 58072  
 DT Conference Article  
 TC Experimental  
 LA English  
 AB Using MOUSE-LCD software we analyze, how the parameters of the "guest-host" cell effects such basic characteristics of LCDs as the **contrast, brightness** and magnitude of the viewing angles. The basic construction of "guest-host" LCD includes one input **polarizer** and reveals a negative **contrast**. We showed, that to increase the average **contrast**, transmission and viewing angles of "guest-host" LCDs we have to use the LC cells with the twist angle of 90deg, while the thickness of the LC layer should be sufficiently high. The concentration of the dye must be optimized for the applied values of LC cell thickness and twist angle. The higher values of LC optical anisotropy  $\Delta n$  results in the increase of the display **contrast** in our case, contrary to the non-polaroid variant of "guest-host" LCDs. One **polarizer** construction of a transmissive <<guest-host>> LCD with a phase retardation plate was also analyzed. The application of a phase compensator in GH-LCDs allows to use thin LC cells with a high concentration of dichroic dye to get a **maximum contrast and transmission** for **minimum** response times. Our calculations may be helpful for the production of the new efficient "guest-host" LCD configurations. 5 Refs.  
 CC 741.3 Optical Devices and Systems; 921.5 Optimization Techniques; 723.1 Computer Programming; 741.1 Light. Optics; 931.2 Physical Properties of Gases, Liquids and Solids; 921.6 Numerical Methods  
 CT \*Liquid crystal displays; Computer software; Light polarization; Anisotropy; Calculations; Light transmission; Optimization  
 ST Guest host effect; Negative **contrast**; Optical anisotropy; Phase retardation plate; **Brightness**; Dichroic dye

L75 ANSWER 47 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2000:247349 HCAPLUS  
 DN 132:266176  
 ED Entered STN: 18 Apr 2000  
 TI Mold-release films for protection of liquid crystal display polarizing plates  
 IN Isaki, Kimihiro; Ozaki, Yoshihide; Inagaki, Masashi  
 PA Mitsubishi Chemical Polyester Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM B32B027-00  
 ICS B32B027-36  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 74

## FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000108252	A2	20000418	JP 1998-281094	19981002
	KR 2000028755	A	20000525	KR 1999-42047	19990930
PRAI	JP 1998-281094	A	19981002		
	JP 1998-317260	A	19981109		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000108252	ICM	B32B027-00
	ICS	B32B027-36

AB The mold-release films comprise PET films coated with mold-release layers with residual adhesion rate  $\geq 80\%$  at one side under satisfying  $\Delta H \leq 3$  and  $L \geq 70$ . [ $\Delta H$  = change (%) of the film turbidity after heat treatment at  $170^\circ$  for 30 min ;  $L$  = **light transmittance** (%) at 550 nm]. Thus, a biaxially stretched PET film was successively coated with an antistatic composition containing 70%  $[\text{Me}_2\text{NCH}_2\text{CH}_2\text{NMe}_2(\text{CH}_2)_2\text{O}(\text{CH}_2)_2]_n$ . 2nCl<sup>-</sup> (antistatic agent) and 30% Nikasol FX 625 (binder) and a composition containing KS 847H (silicone) 100, PL 50T (curing catalyst) 1, and MEK/PhMe solvent 1500 parts to give a mold-release film with residual adhesion rate 95%, turbidity change 0.8%, **light transmittance** (550 nm) 85%, and good antistatic characteristics.

ST mold release film protection display polarizing plate; silicone mold release agent film LCD polarizer protection; ionene polymer antistatic coating mold release film

IT Ionene polymers

RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(antistatic agent; antistatic mold-release films for protection of **liquid crystal display** polarizing plates)

IT Transparent films

(antistatic mold-release films for protection of **liquid crystal display** polarizing plates)

IT Polysiloxanes, uses

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(di-Me, di-Ph, methoxy, hydroxy-terminated, KS 723B, reaction products with siloxanes; antistatic mold-release films for protection of **liquid crystal display** polarizing plates)

IT Antistatic agents

(ionene polymers or pyrrolidinium polymers; antistatic mold-release films for protection of **liquid crystal display** polarizing plates)

IT Acrylic polymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(methoxymelamine-crosslinked, binder; antistatic mold-release films for protection of **liquid crystal display** polarizing plates)

IT **Liquid crystal displays**

Release films

(mold-release films for protection of **liquid crystal display** polarizing plates)

IT Polysiloxanes, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(mold-release layer; antistatic mold-release films for protection of **liquid crystal display** polarizing plates)

IT Polyesters, uses

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (substrate; antistatic mold-release films for protection of liq  
 . **crystal display** polarizing plates)

IT 26062-79-3, Shallol DC 902P 31512-74-0 39660-17-8 65035-38-3, ST  
 1000 125148-13-2, PAS 88  
 RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or  
 engineered material use); USES (Uses)  
 (antistatic agent; antistatic mold-release films for protection of  
**liquid crystal display** polarizing plates)

IT 263564-62-1, X 92-162  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (antistatic mold-release films for protection of **liquid**  
**crystal display** polarizing plates)

IT 25035-74-9, Ethyl acrylate-methyl methacrylate-methylolacrylamide  
 copolymer 141444-05-5, Nikasol FX 625  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (binder; antistatic mold-release films for protection of **liquid**  
**crystal display** polarizing plates)

IT 108-78-1D, Melamine, methoxy derivs. 4261-70-5, Methoxymethylmelamine  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (crosslinking agent; antistatic mold-release films for protection of  
**liquid crystal display** polarizing plates)

IT 112099-43-1D, KS 723A, reaction products with siloxanes  
 RL: PRP (Properties); TEM (Technical or engineered material use); USES  
 (Uses)  
 (mold-release **layer**; antistatic mold-release films for  
 protection of **liquid crystal display**  
 polarizing plates)

IT 25038-59-9, Poly(ethylene terephthalate), uses  
 RL: PRP (Properties); TEM (Technical or engineered material use); USES  
 (Uses)  
 (substrate; antistatic mold-release films for protection of liq  
 . **crystal display** polarizing plates)

L75 ANSWER 48 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:166101 HCAPLUS

DN 132:214820

ED Entered STN: 14 Mar 2000

TI Reverse-mode polymer dispersed reflective **liquid crystal**  
**display** device and method of manufacture thereof

IN Hiraki, Hajime; Ueki, Satoshi; Mitsui, Seiichi

PA Sharp Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G02F001-1333

ICS G02F001-1335; G02F001-137

CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and  
 Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000075272	A2	20000314	JP 1998-247663	19980902
PRAI	JP 1998-247663		19980902		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000075272	ICM	G02F001-1333

ICS G02F001-1335; G02F001-137

- AB The reverse-mode polymer dispersed reflective **liquid crystal display** device having an optical unit materials including liquid crystal **layer** between a pair of substrates having a transparent electrode and an alignment film on the viewer side substrate, a reflective **layer**, and an alignment **layer** on the other substrate, wherein the optical unit materials have  $\geq 10\%$  **light transmittance** towards one of the light wavelength in 300-410 nm and  $\geq 2$  of the ratio value between **maximum** and **min. light transmittance** towards the **light** of the above wavelength on a divided area corresponding to a color micro filter pixel. The display device provides the improved image quality.
- ST reverse mode polymer disperse reflective liq crystal **display**
- IT **Liquid crystal displays**  
Optical filters  
(reverse mode polymer dispersed reflective **liquid crystal display** device and method of manufacture thereof)
- IT 260788-32-7, SW 5017  
RL: TEM (Technical or engineered material use); USES (Uses)  
(liquid crystal material for reverse mode polymer dispersed reflective **liquid crystal display** device)
- IT 260788-31-6, Mixture C  
RL: DEV (Device component use); USES (Uses)  
(liquid crystal polymer of reverse mode polymer dispersed reflective **liquid crystal display** device)
- IT 119313-12-1, Irgacure 369  
RL: TEM (Technical or engineered material use); USES (Uses)  
(photochem. polymerization initiator for reverse mode polymer dispersed reflective **liquid crystal display** device)
- L75 ANSWER 49 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN
- AN 2003(42):12281 COMPENDEX
- TI Improved reflective **displays** based on polymer-dispersed **liquid crystals**.
- AU Bowley, C.C. (Brown University, Providence, RI, United States); Crawford, G.P.
- SO Journal of Optical Technology (A Translation of Opticheskii Zhurnal) v 67 n 8 August 2000 2000.p 717-722  
CODEN: JOTEE4 ISSN: 1070-9762
- PY 2000
- DT Journal
- TC Theoretical; Experimental
- LA English
- AB **Layered** dispersions of liquid crystals and polymers form a new class of materials for reflective **displays**, known as holographic polymer-dispersed **liquid crystals** (H-PDLC). Alternating **layers** of liquid crystal and polymer having dimensions of about 150nm possess a variable reflectance, providing a wide reflection spectrum in the absence of a field. When an electric field is applied, this coefficient takes an intermediate value between the **refractive index** of the liquid crystal and that of the polymer, smoothing out the difference between them. This article is devoted to research and development of these materials, which are promising for use in reflective displays due to their **brightness**, saturation, and low control voltage. \$CPY 2000 The Optical Society of America. 18 Refs.
- CC 722.2 Computer Peripheral Equipment; 741.3 Optical Devices and Systems; 741.1 Light. Optics; 701.1 Electricity: Basic Concepts and Phenomena
- CT **\*Liquid crystal displays; Light reflection;**

Electric potential; **Refractive** index; Electric field effects  
ST Reflective displays  
ET H

L75 ANSWER 50 OF 96 INSPEC (C) 2005 IEE on STN  
AN 2002:7167226 INSPEC DN A2002-05-4280C-006; B2002-03-7260D-025  
TI Color filter with **light scattering layer** for  
**reflective** LCDs.  
AU Maeda, T.; Hoshi, H.; Taguchi, T. (Electron. Div., Toppan Printing Co.  
Ltd., Saitama, Japan)  
SO IDW '00. Proceedings of the Seventh International Display Workshops  
Tokyo, Japan & San Jose, CA, USA: Inst. Image Inf. & Telev. Eng. & Soc.  
Inf. Display (SID), 2000. p.451-4 of xxi+1226 pp. 4 refs. Also available  
on CD-ROM on PDF format  
Conference: Kobe, Japan, 29 Nov-1 Dec 2000  
Sponsor(s): Inst. Image Inf. & Telev. Eng.; SID  
DT Conference Article  
TC Experimental  
CY United States  
LA English  
AB A color filter with a light scattering **layer** has been developed  
to improve the image performance of reflective LCDs with flat reflectors.  
We optimized both the materials of the scattering **layer** and the  
manufacturing conditions. We also confirmed the requirements for color  
filters; for example, heat durability, light stability, resistance from  
chemicals, mechanical strength and electrical properties. This  
**light scattering layer** for **reflective** LCDs  
realizes excellent optical properties, angular dependence of reflective  
intensity, image-sharpness and **brightness**.  
CC A4280C Spectral and other filters; A4280X Optical coatings; B7260D Display  
characteristics; B4190F Optical coatings and filters; B4150D Liquid  
crystal devices; B7260B Display materials  
CT **BRIGHTNESS**; COLOUR DISPLAYS; LIGHT SCATTERING; **LIQUID**  
**CRYSTAL DISPLAYS**; OPTICAL FILMS; OPTICAL FILTERS;  
PARTICLE SIZE; **REFRACTIVE** INDEX  
ST image performance; reflective LCD; flat reflectors; color filter;  
**light scattering layer**; manufacturing conditions; heat durability;  
light stability; chemical resistance; mechanical strength; electrical  
properties; optical properties; reflective intensity; angular dependence;  
image-sharpness; **brightness**; particle size; **refractive**  
**index difference**; dispersed particles; transparent polymer

L75 ANSWER 51 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 1010426869 JICST-EPlus  
TI New Reflective LCDs: Single-Polarizer, Double-Layered  
STN-LCD and Film STN-LCD with a Quarter-Wave Plate.  
AU FUKUDA I; HAZAMA M; KOSHIDA Y; NAKANE N  
CS Kanazawa Inst. Technol., Ishikawa, Jpn  
SO Proc Int Disp Workshops, (2000) vol. 7th, pp. 325-328. Journal Code:  
L4269A (Fig. 11, Tbl. 2, Ref. 6)  
CY Japan  
DT Conference; Short Communication  
LA English  
STA New  
CC NC06030Q (621.385:621.397)  
CT optical reflection; **liquid crystal display**; flat panel display;  
**polarizer**(light); phase plate; nematic phase; laminate structure;  
reflectivity; wavelength dependence; chromaticity; numerical analysis  
BT electromagnetic **wave reflection**; reflection; display  
device; equipment; optical element; optical system; liquid crystal;

mesophase; phase(thermodynamics); multistory structure; structure; ratio; dependence; degree; numerical calculation; calculation

- L75 ANSWER 52 OF 96 INSPEC (C) 2005 IEE on STN  
 AN 2002:7167187 INSPEC DN B2002-03-7260B-005  
 TI Hybrid aligned quarter-wave LC cell for a single-polarizer reflective display.  
 AU Tae-Hoon Yoon; Sung-Hoon Moon; Gi-Dong Lee; Jae Chang Kim (Dept. of Electron. Eng., Pusan Nat. Univ., South Korea)  
 SO IDW '00. Proceedings of the Seventh International Display Workshops Tokyo, Japan & San Jose, CA, USA: Inst. Image Inf. & Telev. Eng. & Soc. Inf. Display (SID), 2000. p.153-6 of xxi+1226 pp. 6 refs. Also available on CD-ROM on PDF format  
 Conference: Kobe, Japan, 29 Nov-1 Dec 2000  
 Sponsor(s): Inst. Image Inf. & Telev. Eng.; SID  
 DT Conference Article  
 TC Practical; Experimental  
 CY United States  
 LA English  
 AB Recently, an optical configuration of a nontwisted quarter-wave cell that can provide high **contrast** without using a wide-band film was proposed for a single-polarizer reflective LCD. However, its fabrication with currently available LC materials requires a very small cell gap, which may make its mass production difficult. In this work, the proposed configuration is realized by using a hybrid aligned LC layer at a cell gap twice as large as that of a LC cell with homogeneously aligned state.  
 CC B7260B Display materials; B7260F Display equipment and systems; B4150D Liquid crystal devices  
 CT ELECTRONIC EQUIPMENT MANUFACTURE; LIGHT REFLECTION; LIQUID CRYSTAL DISPLAYS; NEMATIC LIQUID CRYSTALS; OPTICAL POLARISERS  
 ST hybrid aligned quarter-wave LC cell; single-polarizer reflective display; optical configuration; nontwisted quarter-wave cell; **contrast**; wide-band film; single-polarizer reflective LCD ; LC materials; cell fabrication; cell gap; mass production; cell configuration; hybrid aligned LC layer; LC cell homogeneously aligned state; nernatic LC cell
- L75 ANSWER 53 OF 96 INSPEC (C) 2005 IEE on STN  
 AN 2000:6743720 INSPEC DN A2000-23-4280G-002; B2000-12-7260D-003  
 TI Correction of **contrast** in projection systems by means of phase-controlled prism coatings and band-shifted twist compensators.  
 AU Rosenbluth, A.E.; Minhua Lu; Yang, K.-H.; Ho, K.; Singh, R.N. (IBM Thomas J. Watson Res. Center, Yorktown Heights, NY, USA); Nakasogi, T.  
 SO Proceedings of the SPIE - The International Society for Optical Engineering (2000) vol.3954, p.63-90. 32 refs.  
 Published by: SPIE-Int. Soc. Opt. Eng  
 Price: CCCC 0277-786X/2000/\$15.00  
 CODEN: PSISDG ISSN: 0277-786X  
 SICI: 0277-786X(2000)3954L:63:CCPS;1-H  
 Conference: Projection Displays 2000: Sixth in a Series. San Jose, CA, USA, 24-25 Jan 2000  
 Sponsor(s): IS&T; SPIE  
 DT Conference Article; Journal  
 TC Theoretical; Experimental  
 CY United States  
 LA English  
 AB Projectors that use LCOS lightvalves face special **contrast** requirements. Most configurations for **reflective light**

valves employ tilted beam-dividing coatings that see both **bright** and dark **polarization** states. The optics must then be designed to eliminate **polarization** mixing at these coatings, which ordinarily arises when the S and P planes for different rays are non-parallel. We show how phase-controlled coatings can exploit the double-pass symmetry of the Plumbicon tri-prism geometry to correct this effect, reducing cross-polarized reflectivity to  $1E-3$  when the light valve is mirror-like in black-state. Though **contrast** in different rays varies as a function of both ray skew component and coating angle of incidence, we show that for  $NA \leq 0.2$  the computation involved in calculating beam **contrast** is essentially equivalent to tracing a single ray. Light valves that use a normally-black TN mode exhibit a non-mirror-like phase dispersion in their black-state, complicating **contrast** control in the optics. Scatter depolarization at the edges of pixel electrodes is enhanced in these light valves, because the inherent twist causes the backplane **polarization** to be rotated out of alignment with pixel edges. We show that all of these **contrast** degradation mechanisms can be addressed by incorporating into the light valve a compensating **layer** having opposite birefringence to the black-state TN active **layer**. Moreover, when the compensating **layer** and driven **layer** are blue-shifted to a shorter LC thickness than would ordinarily be appropriate for the wavelength band of interest, a highly achromatic response is obtained at all gray levels.

CC A4280G Optical prisms and projection systems; A4225J Optical polarization; A4280K Optical beam modulators; A4280X Optical coatings; B7260D Display characteristics; B4150D Liquid crystal devices; B4190F Optical coatings and filters

CT LIGHT POLARISATION; LIGHT VALVES; LIQUID CRYSTAL DISPLAYS; OPTICAL FILMS; OPTICAL PRISMS; OPTICAL PROJECTORS; OPTICAL TRANSFER FUNCTION

ST phase-controlled prism coatings; band-shifted twist compensators; LCOS lightvalves; **reflective light valves**; tilted beam-dividing coatings; **bright polarization states**; **dark polarization states**; **polarization mixing**; S planes; P planes; phase-controlled coatings; double-pass symmetry; Plumbicon tri-prism geometry; **cross-polarized reflectivity**; **contrast**; ray skew component; coating angle of incidence; normally-black TN mode; non-mirror-like phase dispersion; black-state,; **contrast control**; scatter depolarization; pixel electrodes; inherent twist causes; **backplane polarization**; **contrast degradation**; birefringence; **compensating layer**; **driven layer**; LC thickness; chromatic response; gray levels; achromatic response

ET S; P; N\*T; TN; T cp; cp; N cp

L75 ANSWER 54 OF 96 INSPEC (C) 2005 IEE on STN

AN 2001:6902025 INSPEC DN B2001-05-4150D-021

TI Optimization of "guest-host" liquid crystal display.

AU Chigrinov, V.G. (Inst. of Crystallogr., Acad. of Sci., Moscow, Russia); Simonenko, G.V.

SO Molecular Crystals and Liquid Crystals (2000) vol.351, p.51-9. 5 refs. Published by: Gordon & Breach  
CODEN: MCLCE9 ISSN: 1058-725X

SICI: 1058-725X(2000)351L:51:OTHL;1-P

Conference: 5th European Conference on Liquid Crystals (ECLC 99).

Hersonissos, Greece, 25-30 April 1999

Sponsor(s): Gen Secretariat of Res. & Technol., Greece; 16th ILCC Organising Committee, USA; Gordon & Breach Publishing Group; et al

DT Conference Article; Journal

TC Practical; Theoretical  
 CY Switzerland  
 LA English  
 AB Using MOUSE-LCD software we analyze, how the parameters of the "guest-host" cell effects such basic characteristics of LCDs as the **contrast**, **brightness** and magnitude of the viewing angles. The basic construction of "guest-host" LCD includes one input **polarizer** and reveals a negative **contrast**. We showed, that to increase the average **contrast**, transmission and viewing angles of "guest-host" LCDs we have to use the LC cells with the twist angle of 90 degrees , while the thickness of the LC **layer** should be sufficiently high. The concentration of the dye must be optimized for the applied values of LC cell thickness and twist angle. The higher values of LC optical anisotropy  $\Delta n$  results in the increase of the display **contrast** in our case, contrary to the non-polaroid variant of "guest-host" LCDs. One-**polarizer** construction of a transmissive "guest-host" LCD with a phase retardation plate was also analyzed. The application of a phase compensator in GH-LCDs allows to use thin LC cells with a high concentration of dichroic dye to get a **maximum contrast** and **transmission** for **minimum** response times. Our calculations may be helpful for the production of the new efficient "guest-host" LCD configurations.

CC B4150D Liquid crystal devices; B0260 Optimisation techniques; B7260D Display characteristics  
 CT **BRIGHTNESS; LIQUID CRYSTAL DISPLAYS**  
 ; OPTICAL **POLARISERS**; OPTIMISATION; PHYSICS COMPUTING  
 ST optimization; **guest-host liquid crystal display**; MOUSE-LCD software; cell effects; **contrast**; **brightness**; viewing angles; **input polarizer**; optical anisotropy; **one-polarizer construction**; phase retardation plate; phase compensator

L75 ANSWER 55 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
 AN 1010200813 JICST-EPlus  
 TI Smectic **Layer** Structure of Ferroelectric Liquid Crystal between Polymer Fibers.  
 AU FUJIKAKE HIDEO; SATO HIROTO; KIKUCHI HIROSHI; IINO YOSHIKI; KAWAKITA MASAHIRO; TSUCHIYA YUZURU  
 TOYOOKA TAKASHI  
 CS Japan Broadcast. Corp. Sci. and Tech. Res. Lab.  
 Sci. Univ. of Tokyo, Fac. of Sci.  
 SO Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku (IEIC Technical Report (Institute of Electronics, Information and Communication Enginners)), (2000) vol. 100, no. 404(EID2000 198-210), pp. 37-42. Journal Code: S0532B (Fig. 11, Ref. 9)  
 CY Japan  
 DT Journal; Article  
 LA Japanese  
 STA New  
 AB A free-standing composite film of ferroelectric liquid crystal (FLC) and aligned polymer fiber networks supporting plastic thin substrates is expected to be applied to a large and light-weight sheet display in future. We clarified the FLC alignment structures formed between the fine polymer fibers, by **polarizing** microscopic study and X-ray diffraction measurements. It was found that bending of smectic **layers** of FLC is induced in both the film and cross-sectional planes at the phase transition from smectic A to smectic C of FLC. The **light transmittance** properties of the composite film between crossed **polarizers** was analyzed by light propagation simulation in several optical anisotropic media based on the obtained FLC alignment model. (author abst.)

CC NC06030Q; BK03030H (621.385:621.397; 544.252+)  
 CT ferroelectric liquid crystal; **liquid crystal display**; liquid crystal polymer; crystal orientation; crystal structure; **polarizing** microscope; microscopy; X-ray diffraction; phase transition; composite film; anisotropic medium; light propagation; smectic phase  
 BT liquid crystal; mesophase; phase(thermodynamics); ferroelectrics; dielectrics; dielectric material; material; display device; equipment; functional polymer; macromolecule; orientation(direction); structure; optical microscope; microscope; optical instrument; observation and view; X-ray scattering; electromagnetic wave scattering; scattering; diffraction; coherent scattering; membrane and film; medium; electromagnetic wave propagation; wave propagation; propagation(transmission)

L75 ANSWER 56 OF 96 INSPEC (C) 2005 IEE on STN  
 AN 1999:6406811 INSPEC DN B1999-12-4150D-030  
 TI Equivalent retarder approach to reflective **liquid crystal displays**.  
 AU Stallinga, S. (Philips Res. Lab., Eindhoven, Netherlands)  
 SO Journal of Applied Physics (1 Nov. 1999) vol.86, no.9, p.4756-66. 22 refs. Doc. No.: S0021-8979(99)08921-5  
 Published by: AIP  
 Price: CCCC 0021-8979/99/86(9)/4756(11)/\$15.00  
 CODEN: JAPIAU ISSN: 0021-8979  
 SIC1: 0021-8979(19991101)86:9L.4756:ERAR;1-A

DT Journal  
 TC Practical; Theoretical  
 CY United States  
 LA English  
 AB Reflective **liquid crystal displays** (LCDs) are studied using the Jones 2\*2 matrix method. The reflective LCD effectively behaves as a single retardation **layer**. Conditions on the retardation and optical axis orientation of this equivalent retarder in order to obtain high **brightness** and high **contrast** are derived and applied to twisted nematic **layers** without and with a compensating waveplate. The optimization of the display performance by numerical calculations is greatly simplified by analytical results relating the parameters of the liquid crystal, incident **polarization**, and compensator.

CC B4150D Liquid crystal devices; B7260D Display characteristics  
 CT **LIGHT REFLECTION; LIQUID CRYSTAL DISPLAYS**

ST equivalent retarder approach; **reflective liquid crystal displays**; Jones 2\*2 matrix method; **single retardation layer**; optical axis orientation; **high brightness; high contrast; twisted nematic layers**; display performance; **incident polarization**; compensator

L75 ANSWER 57 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
 AN 990326815 JICST-EPlus  
 TI Alignment-Controlled Holographic Polymer Dispersed **Liquid Crystal** for Reflective **Display** Devices.  
 AU KATO K; HISAKI T; DATE M  
 CS Nippon Telegraph And Telephone Corp., Tokyo, Jpn  
 SO Jpn J Appl Phys Part 1, (1999) vol. 38, no. 2A, pp. 805-808. Journal Code: G0520B (Fig. 8, Ref. 8)  
 ISSN: 0021-4922  
 CY Japan  
 DT Journal; Article

LA English

STA New

AB A new type of holographic polymer dispersed liquid crystal (HPDLC) device in which liquid-crystal (LC) alignment is controlled by polymerized **layers** has been developed. In the alignment-controlled HPDLC device, the polymerized regions (polymer **layers**) are formed periodically in homogeneously aligned LC. When an electric field is applied vertically between the substrates, the LC molecules in the residual regions (LC **layers**) rotate towards the electric field. This causes a difference in **refractive** index between the polymer **layers** and LC **layers**, so selective reflection occurs in accordance with Bragg's law. The selectively **reflected** **light** shows strong **polarization** dependence. Only light **polarized** parallel to the alignment direction of LC molecules is reflected. (author abst.)

CC BK03020W; BD03074U (544.252.22; 537.417.06)

CT polymer dispersed liquid crystal; nematic phase; holographic optical element; **liquid crystal display**; multistory structure; period variation; **refractive** index distribution; Bragg reflection; electrooptic effect; optical reflection; voltage dependence; wavelength dependence; reflectivity; molecular orientation

BT liquid crystal; mesophase; phase(thermodynamics); optical element; optical system; display device; equipment; structure; variation; distribution; reflection; optical property; electric field effect; effect; electromagnetic **wave reflection**; dependence; ratio; orientation(direction)

L75 ANSWER 58 OF 96 INSPEC (C) 2005 IEE on STN

AN 2001:6990744 INSPEC DN B2001-09-7260D-028

TI Microscope metrology of **reflective** **light** valves.

AU Ho, K.C.; Rosenbluth, A.E.; Lu, M.; Yang, K.-H. (IBM Thomas J. Watson Res. Center, Yorktown Heights, NY, USA)

SO Society for Information Display 1999 International Symposium Santa Ana, CA, USA: Soc. Inf. Display (SID), 1999. p.520-3 of CD-ROM pp. 9 refs.

Conference: San Jose, CA, USA, 18-20 May 1999

DT Conference Article

TC Experimental

CY United States

LA English

AB A **polarizing** microscope is used to measure the electro-optic properties of nematic light valves on a spatial, spectral, and time-resolved basis. Under the quiescent uniform twist approximation, the response of the liquid crystal **layer** can be broadly characterized by a universal **polarization** conversion efficiency (PCE) function (essentially the reflectivity between crossed **polarizers**), whose primary independent variable is the unified parameter  $\Delta n d / \lambda$ . Spectral resolution capability in the **polarizing** microscope thus allows measurement of light valve PCE as a function of  $\lambda$ ; the PCE response in turn largely determines projector dark state neutrality and color balance across gray scale. Emphasizing the case of a normally black 45 degrees TN **reflective** **light** valve, we use colorimetric analysis of PCE parameter-space to select an optimal cell gap, based on a criterion of near-achromatic black state. Once black state is achromatized, the non-constant slope of the PCE curve implies a characteristic residual variation in CIE chromaticity as gray level is changed (for non-monochromatic illumination). Spectral resolution allows the microscope to measure spatial variations in  $\Delta n d$  (and hence in PCE response). Variations in  $\Delta n d$  may arise from nonuniformity in either cell gap or pretilt.

These may be distinguished by using the microscope to make a spatially resolved measurement of response time.

CC B7260D Display characteristics; B4150D Liquid crystal devices

CT **BRIGHTNESS**; COLORIMETRY; COLOUR DISPLAYS; ELECTRO-OPTICAL MODULATION; LIGHT **POLARISATION**; LIGHT VALVES; **LIQUID CRYSTAL DISPLAYS**; OPTICAL MICROSCOPY; OPTICAL PROJECTORS; REFLECTIVITY

ST **reflective light valves**; **polarizing microscope metrology**; electro-optic properties; nematic light valves; quiescent uniform twist approximation; **universal polarization conversion efficiency**; spectral resolution capability; **reflectivity between crossed polarizers**; twisted nematic; colorimetric analysis; parameter-space; optimal cell gap; near-achromatic black state; characteristic residual variation; CIE chromaticity; spatially resolved measurement; luminosity; polar alignment

ET N\*T; TN; T cp; cp.; N cp

L75 ANSWER 59 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN DUPLICATE 2

AN 2001(9):4305 COMPENDEX

TI Reflective color STN-LCD with a single **polarizer** and double retardation films.

AU Fujita, S. (Matsushita Electric Industrial Co, Ltd, Ishikawa, Jpn); Yamaguchi, H.; Mizuno, H.; Ohtani, T.; Sekime, T.; Hatanaka, T.; Ogawa, T.

SO Journal of the Society for Information Display v 7 n 2 1999. p 135-140,

SID, Santa Ana, CA, USA

CODEN: JSIDE8 ISSN: 1071-0922

PY 1999

DT Journal

TC Theoretical

LA English

AB A reflective color STN-LCD with a single **polarizer** and double retardation films has been investigated. The double retardation films arranged in front of the LC **layer** enabled the LCD to contain reflective electrodes inside the **panel**. This configuration achieves a **bright** image with no parallax. A new construction of a reflective STN-LCD with a single **polarizer** has been developed by means of our own method in which the color difference  $\Delta E^*$  as the optimizing parameter has been used. Further, RGB color filters have been newly designed for our reflective LCD, and an aluminum (Al) **layer** has been introduced as a reflective electrode. As a result, we have realized a 7.8-in.-diagonal reflective color STN-LCD (640\*480) which has 15% reflectance, 14:1 **contrast** ratio, 4096-color capability, and sufficient color gamut. It has been confirmed that the single-**polarizer** reflective color STN-LCD has sufficient performance for mobile business tools. We believe that it will be a key device for this application. (Author abstract) 10 Refs.

CC 741.3 Optical Devices and Systems; 804 Chemical Products Generally; 741.1 Light. Optics

CT **\*Liquid crystal displays**; Color image processing; Light **polarization**; **Light reflection**; Optical filters; Birefringence; Optical films; Nematic liquid crystals

ST Reflective color **liquid crystal displays** (LCD); Super-twisted nematic **liquid crystal displays**; Electrically controlled birefringence (ECB); Retardation films

ET Al

L75 ANSWER 60 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN DUPLICATE 3

AN 1999(52):492 COMPENDEX

TI Improving the display performance of reflective color LCDs with

micro-cone-structure film.

AU Shao, Xibin (Chinese Acad of Sciences, Changchun, China); Guo, Jianxin; Wu, Sheng; Yuan, Jianfeng; Huang, Ximin

SO Journal of the Society for Information Display v 7 n 1 1999.p 67-70  
CODEN: JSIDE8 ISSN: 1071-0922

PY 1999

DT Journal

TC Theoretical

LA English

AB A micro-cone-structure film was proposed to improve the viewing angle of reflective color LCDs, both in chromaticity and **brightness**.The simulation results show that the film works as a collimating **layer** when the light is incident from the bottom side of cone and as a scattering **layer** when the light is incident from the tip side.The viewing-angle dependence of reflective **interference** color filters (RICF) is weakened dramatically by including such a film.The film is not only useful to RICF, but also to most reflective color LCD modes.(Author abstract) 5 Refs.

CC 741.3 Optical Devices and Systems; 741.1 Light. Optics; 723.5 Computer Applications

CT **\*Liquid crystal displays; Light reflection;** Optical films; Computer simulation; Light scattering; Light **interference;** Optical filters; Color

ST Reflective **interference** color filters (RICF)

L75 ANSWER 61 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 990684372 JICST-EPlus

TI Electro-Optical properties of Reflective TNLCDs with one **polarizer** and one liquid-crystal polymer film.

AU FUKUDA ICHIRO; NAKANE NORIYUKI; HAZAMA MAKOTO; KOTANI YUKEO  
UCHIDA TATSUO

CS Kanazawa Inst. of Technol., Electron Device System Res. Lab.  
Tohoku Univ., Fac. of Eng.

SO Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku (IEIC Technical Report (Institute of Electronics, Information and Communication Enginners)), (1999) vol. 99, no. 143(EID99 1-14), pp. 37-42. Journal Code: S0532B (Fig. 11, Tbl. 5, Ref. 7)

CY Japan

DT Journal; Article

LA Japanese

STA New

AB The reflective color LCD without a backlight is an important key device for the progress and diffusion of high functional portable information terminal. This paper has numerically analyzed the electro-optical properties of a new normally white mode reflective TNLCD composed of the previously proposed normally black mode reflective TNLCD and one liquid-crystal polymer film with a twist angle of the same magnitude, but with an opposite-handed to the LC **layer**. It was found that several sets of solutions exist for obtaining an achromatic image with high luminance as well as a high contrast ratio, and also found that the combination of an LC with a small dispersion of  $\Delta n_{LC}$  and a retardation film with a large dispersion of  $\Delta n_R$  is preferable for obtaining a high contrast ratio. (author abst.)

CC NC06030Q (621.385:621.397)

CT **liquid crystal display;** flat panel display; color display; optical reflection; molecular orientation; liquid crystal polymer; polymer membrane; **polarizer**(light); nematic phase; internal structure; optimum condition; reflectivity; wavelength dependence

BT display device; equipment; electromagnetic **wave reflection;** reflection; orientation(direction); liquid crystal;

mesophase; phase(thermodynamics); functional polymer; macromolecule;  
membrane and film; optical element; optical system; structure; condition;  
ratio; dependence

- L75 ANSWER 62 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 990399117 JICST-EPlus  
TI An Optical Design for Reflective Color STN-LCDs.  
AU KOMURA S; KUWABARA K; ITOU O; FUNAHATA K; KONDO K  
SAITO T; NAGASHIMA Y; KUBO K  
CS Hitachi, Ltd., Hitachi-shi, Jpn  
Hitachi, Ltd., Mobara-shi, Jpn  
SO Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku (IEIC Technical Report  
(Institute of Electronics, Information and Communication Engineers)),  
(1999) vol. 98, no. 665(EID98 197-231), pp. 33-36. Journal Code: S0532B  
(Fig. 5, Ref. 7)  
CY Japan  
DT Journal; Article  
LA English  
STA New  
AB This paper describes the optical design method for reflective color  
STN-LCDs with single **polarizers**. The design method ensures the  
devices have high reflectance, high contrast ratio, and good color purity.  
The design of an STN liquid crystal **layer**, a **polarizer**  
, two birefringent films, color filters and a diffusion film are presented  
and a novel evaluation method for reflective LCDs is proposed. In the  
design of the STN LC cell, the **polarizer**, and the birefringent  
films, i.e. the design of the Single **Polarizer** STN LCD mode, we  
focus on achieving achromatic dark representation, since we found earlier  
that the chromaticity in the dark representation significantly affects the  
color balance. The **polarizer** and birefringent films are  
optimized to achieve achromatic dark representation for a given STN LC  
**layer**. The retardation of the STN LC **layer** is optimized  
to achieve achromatic dark representation and high reflectance. The color  
filters are optimized to achieve a large color gamut and high  
transmittance with good white balance. The diffusion film is designed to  
increase the reflection in an office. (author abst.)  
CC NC06030Q; BD03090A (621.385:621.397; 535.6)  
CT **liquid crystal display**; color display; colorimetry; nematic  
phase; optimum design; optical reflection; **polarized** light; hue;  
white; color reproduction; color filter; optical diffusion; birefringence  
BT display device; equipment; optical measurement; measurement; liquid  
crystal; mesophase; phase(thermodynamics); design; electromagnetic  
**wave reflection**; reflection; **polarized** wave;  
**polarization**; color; regeneration; filter(signal); filter; optical  
scattering; electromagnetic wave scattering; scattering; optical property
- L75 ANSWER 63 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 990947891 JICST-EPlus  
TI Inspection of a Transparent **Layered**-Product for Chipping-off and  
Displacement to Parts.  
AU SHIMIZU MAKOTO; ISHII AKIRA  
CS Ritsumeikan Univ.  
SO Nippon Kikai Gakkai Robotikusu, Mekatoronikusu Koenkai Koen Ronbunshu,  
(1999) vol. 1999, no. Pt.2, pp. 2A1.19.008(1)-2A1.19.008(2). Journal Code:  
L0318A (Fig. 5, Ref. 1)  
CY Japan  
DT Conference; Short Communication  
LA Japanese  
STA New  
AB This paper presents a new method of detecting chipping-off of a glass

substrate and displacement of a **polarization** plate in LCD. The schlieren method was successfully applied to detect defects and to build a low-cost inspection system. Chipping-off was detected by evaluating a dark area and the displaced **polarization** plate was discriminated from the glass substrate by measuring intensity of **transmitted light**. A tungsten bulb was used as a low-cost collimated light source. (author abst.)

CC NC06030Q (621.385:621.397)

CT **liquid crystal display**; flaw inspection; schlieren method; visual test; transparent material; laminated material; gray scale; lightness

BT display device; equipment; inspection; visualization; modification; eye diagnosis; diagnosis; material; measuring instrument; degree

L75 ANSWER 64 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1998:163198 HCAPLUS

DN 128:237299

ED Entered STN: 19 Mar 1998

TI **Liquid crystal display** element and its manufacture

IN Lee, Seung Hee; Kim, Haeng Ryul; Poh, Bong Kyu; Lee, Deuk Soo; Park, Kan Jun

PA Hyundai Electronics Industries Co., Ltd., S. Korea

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G02F001-1333

ICS G02F001-1343

CC 74-13 (Radiation Chemistry, **Photochemistry**, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10062767	A2	19980306	JP 1997-181774	19970623
	JP 3122985	B2	20010109		
	KR 190527	B1	19990601	KR 1996-22854	19960621
	US 5959708	A	19990928	US 1997-878809	19970619
	CN 1174335	A	19980225	CN 1997-117121	19970621
	CN 1104654	B	20030402		
	CN 1169545	A	19980107	CN 1997-113589	19970628
	CN 1091524	B	20020925		
PRAI	KR 1996-22854	A	19960621		
	KR 1996-59508	A	19961129		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 10062767	ICM	G02F001-1333
	ICS	G02F001-1343
US 5959708	NCL	349/143.000; 349/122.000; 349/141.000
	ECLA	G02F001/1343A8

AB The **liquid crystal display** element comprises a 1st insulating transparent substrate having pixel electrodes and counter electrodes formed on the same surface and covered by an elec. conductivity polymer film, a 2nd transparent substrate, and a liquid crystal layer with a neg. anisotropic dielec. constant between the substrates. The polymer may be selected from polyacetylene, polyaniline, p-phenylene, polypyrrole, polythiophene, and p-phenylenevinylene. The polymer film may contain a photopolymn. initiator sensitive to UV light.

The process was also claimed. The polymer film **minimized interference** between the pixel electrodes and data lines, thereby forming elec. field parallel to the liquid crystal cell.

ST **liq crystal display** pixel electrode; elec  
conductive polymer **liq crystal display**  
IT **Liquid crystal displays**  
UV radiation  
(**liquid crystal display** element having  
elec. conductive polymer film)  
IT Polyacetylenes, uses  
RL: DEV (Device component use); USES (Uses)  
(**liquid crystal display** element having  
elec. conductive polymer film)  
IT Polymerization catalysts  
(photopolymn.; **liquid crystal display**  
element having elec. conductive polymer film)  
IT 3355-34-8, p-Phenylene 25067-58-7, Polyacetylene 25233-30-1,  
Polyaniline 25233-34-5, Polythiophene 26009-24-5, p-Phenylenevinylene  
30604-81-0, Polypyrrole  
RL: DEV (Device component use); USES (Uses)  
(**liquid crystal display** element having  
elec. conductive polymer film)

L75 ANSWER 65 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 1998:672411 HCAPLUS  
DN 129:268008  
ED Entered STN: 23 Oct 1998  
TI Reflection-type **liquid-crystal display**  
**panel** and method of fabricating the same  
IN Ichimura, Koji  
PA Dai Nippon Printing Co., Ltd., Japan  
SO Eur. Pat. Appl., 24 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
IC ICM G02F001-1335  
ICS G02F001-1333; G02F001-1343  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 869386	A2	19981007	EP 1998-105972	19980401
	EP 869386	A3	20000315		
	EP 869386	B1	20031217		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 10282514	A2	19981023	JP 1997-96404	19970401
	JP 10282482	A2	19981023	JP 1997-96405	19970401
	US 6181397	B1	20010130	US 1998-48754	19980325
	EP 1411384	A2	20040421	EP 2003-28585	19980401
	EP 1411384	A3	20041020		
	R: DE, FR, GB				
	US 6327009	B1	20011204	US 1999-421103	19991019
	US 2002036734	A1	20020328	US 2001-992062	20011105
	US 6882387	B2	20050419		
	US 2005052598	A1	20050310	US 2004-968729	20041018
PRAI	JP 1997-96404	A	19970401		
	JP 1997-96405	A	19970401		
	US 1998-48754	A3	19980325		

EP 1998-105972 A3 19980401  
 US 2001-992062 A3 20011105

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 869386	ICM	G02F001-1335
	ICS	G02F001-1333; G02F001-1343
EP 869386	ECLA	G02F001/1333I; G02F001/1335R
US 6181397	NCL	349/113.000; 349/138.000; 349/187.000
	ECLA	G02F001/1333I; G02F001/1335R
EP 1411384	ECLA	G02F001/1333I; G02F001/1335R
US 6327009	NCL	349/113.000; 349/138.000; 349/187.000
	ECLA	G02F001/1333I; G02F001/1335R
US 2002036734	NCL	349/113.000
	ECLA	G02F001/1333I; G02F001/1335R
US 2005052598	NCL	349/113.000
	ECLA	G02F001/1333I; G02F001/1335R

AB In a reflection-type liquid-crystal display panel provided with reflective electrodes, a reflective metal film is formed on an insulating layer having a surface provided with minute irregularities to form the reflective metal electrodes having surfaces of a shape substantially complementary to the minute irregularities. Since the surfaces of the electrodes are provided with minute irregularities, external light incident on the liquid crystal display panel is not reflected in a specular reflection mode, so that images are displayed on the liquid crystal display panel in satisfactory visibility. The insulating layer is formed by forming a pos. photosensitive resin layer on a back substrate, exposing the pos. photosensitive resin layer to light through a transparent sheet having a surface provided with minute irregularities, and subjecting the exposed pos. photosensitive resin layer to a developing process. The thus fabricated liquid-crystal display panel is capable of suppressing reflection of external matters therein and of displaying images in satisfactory visibility. The insulating layer underlying the electrodes is patterned in a pattern similar to that of the electrodes to suppress current leakage between the electrodes. A method of fabricating the reflection-type liquid crystal display panel is also disclosed.

ST reflective electrode liq crystal display device

IT Photolithography  
 (in preparing reflective electrodes with minute surface irregularities for liquid-crystal display devices)

IT Liquid crystal displays  
 (passive-matrix; with reflective electrodes with minute surface irregularities on back panels)

IT Photoimaging materials  
 (pos.; for preparing reflective electrodes with minute surface irregularities for liquid-crystal display devices)

IT Electrodes  
 (with minute surface irregularities on back panels of liquid-crystal display devices)

IT 208937-19-3, JSR Optmer PC 302

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(for preparing **reflective** electrodes with **minute** surface irregularities for **liquid-crystal display** devices)

IT 7429-90-5, Aluminum, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(**reflective** electrodes with **minute** surface irregularities for **liquid-crystal display** devices)

L75 ANSWER 66 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 980604823 JICST-EPlus

TI Polymer-Dispersed Cholesteric Liquid-Crystal Device Containing Directly Stacked Right- and Left-Handed **Layers**.

AU KATO K; TANAKA K

CS Nippon Telegraph and Telephone Corp., Tokyo, JPN

SO Jpn J Appl Phys Part 1, (1998) vol. 37, no. 4A, pp. 1970-1973. Journal

Code: G0520B (Fig. 4, Ref. 6)

ISSN: 0021-4922

CY Japan

DT Journal; Article

LA English

STA New

AB Right- and left-handed polymer-dispersed cholesteric (chiral nematic) liquid-crystal (PDCLC) **layers** are stacked directly between a pair of substrates. Each **layer** in a device containing these stacked **layers** exhibits independent characteristics. This is because the PDCLC structure confines the liquid crystal (LC) within small cavities (droplets) surrounded by polymer, preventing LC mixing between **layers**. This technique makes PDCLC devices **polarization** free and effectively increases the reflectivity of such devices. (author abst.)

CC BK03030H (544.252+)

CT **liquid crystal display**; cholesteric phase; disperse system; polymer complex; laminate structure; optical transmission; optical reflection; electrooptic effect; **polarization** property; liquid crystal; frequency dependence; memory(psychology); polymer dispersed liquid crystal; wavelength dependence; memory effect

BT display device; equipment; mesophase; phase(thermodynamics); macromolecule; complex(substance); multistory structure; structure; electromagnetic wave transmission; transmission(propagation); electromagnetic **wave reflection**; reflection; optical property; electric field effect; effect; dependence

L75 ANSWER 67 OF 96 INSPEC (C) 2005 IEE on STN

AN 1999:6244787 INSPEC DN B1999-06-7260D-049

TI Optical design of R-OCB mode full-color reflective LCD with wide viewing angle and high **contrast**.

AU Ishinabe, T.; Miyashita, T.; Uchida, T. (Tohoku Univ., Sendai, Japan)

SO 1998 SID International Symposium. Digest of Technical Papers. Vol. 29 Santa Anaheim, CA, USA: Soc. Inf. Display, 1998. p.774-7 of xxiv+1269 pp. 8 refs.

Conference: Anaheim, CA, USA, 17-22 May 1998

Price: CCCC 0098-0966X/98/2901-0774-\$1.00+.00

DT Conference Article

TC Theoretical; Experimental

CY United States

LA English

AB One **polarizer** type reflective LCDs have been developed for reflective color LCDs with high resolution and high **brightness**.

However, in order to apply it to high-quality monitor displays, its **contrast** ratio is not sufficiently high in wide range of wavelength and viewing angle. In this paper, we discuss the design rule of liquid crystal **layer** and retardation films for one **polarizer** type reflective LCDs to get high quality, especially high **contrast** ratio, for the monitor displays.

CC B7260D Display characteristics; B4150D Liquid crystal devices

CT **BRIGHTNESS**; COLORIMETRY; COLOUR DISPLAYS; COMPUTER DISPLAYS;

**LIGHT POLARISATION**; **LIGHT REFLECTION**;

**LIQUID CRYSTAL DISPLAYS**; OPTICAL DESIGN

TECHNIQUES; OPTIMISATION

ST R-OCB mode; color reflective LCD; viewing angle; **contrast**; color

LCD; resolution; **brightness**; **liquid crystal layer**;

retardation films; **polarizer**; monitor displays; optical design;

optimisation; retardation film

L75 ANSWER 68 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN

AN 1999(44):3167 COMPENDEX

TI Optical design of R-OCB mode full-color reflective LCD with wide viewing angle and high **contrast**.

AU Ishinabe, Takahiro (Tohoku Univ, Sendai, Jpn); Miyashita, Tetsuya; Uchida, Tatsuo

MT Proceedings of the 1998 SID International Symposium.

ML Anaheim, CA, USA

SO Journal of the Society for Information Display v 6 n 4 1998.p 243-246

CODEN: JSIDE8 ISSN: 1071-0922

PY 1998

MN 55555

DT Journal

TC Theoretical

LA English

AB One-**polarizer**-type reflective LCDs have been developed for reflective color LCDs with high resolution and high luminance. However, in order to apply them to high-quality monitor displays, their **contrast** ratio is not sufficiently high in terms of wavelength and viewing angle. In this paper, we discuss the design rule for liquid-crystal **layer** and retardation films for one-**polarizer**-type reflective LCDs in order to achieve high quality, especially high **contrast** ratio, for monitor displays. (Author abstract) 8 Refs.

CC 741.3 Optical Devices and Systems; 741.1 Light. Optics; 741 Light, Optics and Optical Devices

CT **\*Liquid crystal displays**; Color image processing; **Light reflection**; Image quality; Optical films; **Light polarization**

ST Reflective color **liquid crystal displays** (LCD); Retardation films

L75 ANSWER 69 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN

AN 1998(29):1625 COMPENDEX

TI Cholesteric band modulation filter LCD-imagers.

AU Schadt, Martin (ROLIC Ltd, Basel, Switz); Schmitt, Klaus

MT Proceedings of the 1998 8th ITG-Conference on Displays and Vacuum Electronics.

ML Garmisch, Ger

MD 29 Apr 1998-30 Apr 1998

SO ITG-Fachbericht v 150 1998.p 201-205

CODEN: ITGFEY ISSN: 0932-6022

PY 1998

MN 48416

DT Journal

TC Theoretical  
 LA English  
 AB Recent progress made in cholesteric projector configurations and cholesteric **liquid crystal displays** (LCDs) has considerably spurred interest in monomeric and polymeric cholesteric materials left bracket 1-6 right bracket . We have shown that compact and **bright** video LCD projectors are feasible with stacks of cholesteric band modulation filters (BMFs) left bracket 3 right bracket . The discrete cholesteric filters which we originally used were planar aligned sandwich cells made of glass plates which comprised temperature compensated monomeric cholesteric mixtures with selective **reflection/transmission wavelengths**  $\lambda_0$  tuned to the respective red, green and blue color coordinates left bracket 1, 3 right bracket . The discrete filters and retarders were attached to each other by optical cement left bracket 3 right bracket . Cholesteric projection optics are reviewed. The first solid state, full color BMF-LCD imager made of polymeric cholesteric films with integrated photo-aligned nematic liquid crystal polymer retarder **layers** left bracket 1, 7 right bracket is presented. The 8  $\mu$ m thin, non-absorbing BMF **layers** are directly coated onto the LCD imager substrates, thus rendering flat cholesteric projection engines or **bright** direct view displays with no discrete optical elements feasible. (Author abstract) 14 Refs.

CC 741.3 Optical Devices and Systems; 741 Light, Optics and Optical Devices; 804 Chemical Products Generally; 815.1 Polymeric Materials; 741.1 Light. Optics

CT \*Optical projectors; Optics; Optical films; Nematic liquid crystals; Cholesteric liquid crystals; Polymers; Light **polarization**; **Light reflection**; **Liquid crystal displays**; Imaging systems

ST Cholesteric band modulation filters; Cholesteric projection optics; Polymeric cholesteric films

L75 ANSWER 70 OF 96 INSPEC (C) 2005 IEE on STN  
 AN 1998:5888370 INSPEC DN B9805-4150D-016  
 TI A study of optical design of reflective liquid crystal device.  
 AU Shimizu, M.  
 SO Record of Electrical and Communication Engineering Conversazione Tohoku University (Jan. 1998) vol.66, no.1, p.139-40. 2 refs.  
 Published by: Tohoku Univ  
 CODEN: TDDDAI ISSN: 0385-7719  
 SICI: 0385-7719(199801)66:1L:139:SODR;1-S

DT Journal  
 TC Experimental  
 CY Japan  
 LA Japanese  
 AB In order to prevent parallax, or decrease of resolution, in reflective LCDs, the diffusing reflector must be placed inside of the LC-cell, just behind of the liquid crystal **layer**, and near **polarizer** must be removed. In such single-**polarizer**-LCD, effect of the phase difference and depolarization of **reflected light** by diffusing **reflector** was evaluated. We designed reflective STN-LCD with single-**polarizer**. It is confirmed from the results that we obtained paper white, 100 **contrast** and full color display with optimum diffusing reflector and color filter.

CC B4150D Liquid crystal devices; B7260 Display technology and systems  
 CT **LIQUID CRYSTAL DISPLAYS**  
 ST optical design; reflective liquid crystal device; parallax; resolution; diffusing reflector; phase difference; depolarization; STN-LCD; **single polarizer**; **contrast**; full color display; color

filter  
ET In

L75 ANSWER 71 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN  
AN 2002(38):4188 COMPENDEX  
TI Reflective color STN-LCD technologies.  
AU Fujita, Shingo (Liquid Crystal Display Division Matsushita Elec. Indust. Co., Ltd., Ishikawa, Japan); Yamaguchi, Hisanori; Mizuno, Hiroaki; Ohtani, Toshiya; Sekime, Tomoaki; Hatanaka, Takayuki; Ogawa, Tetsu  
MT Liquid Crystal Materials, Devices and Applications VI.  
MO IS and T; SPIE  
ML San Jose, CA, United States  
MD 26 Jan 1998-27 Jan 1998  
SO Proceedings of SPIE - The International Society for Optical Engineering v 3297 1998.p 108-114  
CODEN: PSISDG ISSN: 0277-786X  
PY 1998  
MN 59551  
DT Conference Article  
TC Theoretical; Experimental  
LA English  
AB Reflective color STN-LCDs should be one of the most promising devices for mobile business tools (MBT), because the demand such as low cost, low power consumption, light weight and compact size is especially strong for this application. A reflective color STN-LCD with a single **polarizer** and double retardation films has been investigated. The double retardation films arranged in front of LC-layer enabled the LCD to contain reflective electrodes inside the **panel**. This configuration achieves the **bright** image with no parallax. A new construction of a reflective STN-LCD with a single **polarizer** has been decided by means of our own method in which the color difference  $\Delta E^*$  as the optimizing parameter has been used. Further, RGB color filters has been newly designed for our reflective LCD, and the aluminum (Al) **layer** has been introduced as reflective electrodes. As a result, we have realized 7.8-in.-diagonal reflective color STN-LCD(640 \* 480) which has 15% reflectance, 1: 14 **contrast** ratio, 4096 color capability and the sufficient color gamut. It has been confirmed that the single **polarizer** reflective color STN-LCD has sufficient enough performance for MBT use. We believe that it will be a key device for this application. 9 Refs.  
CC 722.2 Computer Peripheral Equipment; 741.3 Optical Devices and Systems; 804 Chemical Products Generally; 931.2 Physical Properties of Gases, Liquids and Solids; 741.1 Light. Optics  
CT **\*Liquid crystal displays**; Image quality; Light **polarization**; Electrodes; Birefringence; **Light reflection**; Nematic liquid crystals  
ST Mobile business tools (MBT); Super twisted nematic (STN)  
ET Al

L75 ANSWER 72 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 980236440 JICST-EPlus  
TI Optical calculation of Holographic Dispersed Liquid Crystal (HPDLC).  
AU MIMURA KOJI; SUMIYOSHI KEN  
CS NEC Corp.  
SO Eizo Joho Media Gakkai Gijutsu Hokoku, (1998) vol. 22, no. 5 (IDY98 26-46), pp. 57-62. Journal Code: S0209A (Fig. 9, Ref. 4)  
ISSN: 1342-6893  
CY Japan  
DT Journal; Article  
LA Japanese

STA New

AB The holographic PDLC, which required no color filter nor **polarizer**, and have shown that a promising novel color **refractive** LCD because of its high reflectivity and high color purity. It has a diffraction grating structure with alternating liquid crystal and polymer **layers**. We have simulated the optical property of HPDLC and have in the case of S-**polarized light** incident, a high **reflectivity** is expected, which in the case of P-**polarized light** incident, the **reflectivity** depends on relation between the angle of incidence and the direction of the multilayer. We have also estimated the optical property of HPDLC depending on our measurements of optical constants of LC and of polymer. (author abst.)

CC BK03010L; NC06030Q (544.25; 621.385:621.397)

CT holographic optical element; diffraction grating; liquid crystal; **liquid crystal display**; numerical calculation; **polarized light**; reflectivity; **refractive index**

BT optical element; optical system; lattice; mesophase; phase(thermodynamics); display device; equipment; calculation; **polarized wave**; **polarization**; ratio

L75 ANSWER 73 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 980739224 JICST-EPlus

TI Moving image holography using ILA device. Expansion of the reproduced image and reduction of the unnecessary light.

AU NAKAMURA TOMOYUKI; YAMADA HIROAKI

CS Shibaura Inst. of Technol.

SO Gazo Rabo, (1998) vol. 9, no. 8, pp. 50-54. Journal Code: L2340A (Fig. 6, Ref. 13)

ISSN: 0915-6755

CY Japan

DT Journal; Commentary

LA Japanese

STA New

AB Optical writing type **liquid crystal display** (LCD) is suitable for the holography at a high resolution. The effectiveness of the spatial photomodulator using ILA device developed recently by Hughes-JVC Technology Co. was examined. ILA consists of three **layers**: electrically conducting **layer** in the writing side, liquid crystal **layer** in the readout side, and separating **layer** of the writing and readout. Particularly, response speed is as high as 16ms, and it can cope with movie display. Using hologram **interference** fringe displayed on TFT-LCD as a writing object, the writing was carried out from the one side of ILA and was read out using the **reflected light** from the opposite side to form the image. The spactial frequency with which ILA can display is about 60l/mm and 5 times of the display of TFT-LCD. The appropriate combination of the **polarization** angle of the reaout light and the **polarization** angle of the **polarizer** can reduce the zero order diffracted light and makes the observation of reproduced image easy.

CC BD03073D; NC06030Q (535.417+; 621.385:621.397)

CT moving image; holography; **liquid crystal display**; high-resolution; spatial light modulator; multistory structure; response time; thin film transistor; **interference** fringe; spatial frequency; **polarizing angle**

BT image; image technology; technology; display device; equipment; resolving power; performance; optical modulator; optical element; optical system; modulator; modulator-demodulator; structure; time; transistor; semiconductor device; solid state device; **interference**; angle; geometric quantity

L75 ANSWER 74 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
 AN 980648824 JICST-EPlus  
 TI Optical design of R-OCB Mode Full-color Reflective LCD with Wide viewing angle and High contrast.  
 AU ISHINABE TAKAHIRO; MIYASHITA TETSUYA; UCHIDA TATSUO  
 CS Tohoku Univ., Fac. of Eng.  
 SO Eizo Joho Media Gakkai Gijutsu Hokoku, (1998) vol. 22, no. 31(IDY98 95-101), pp. 29-34. Journal Code: S0209A (Fig. 7, Ref. 8)  
 ISSN: 1342-6893  
 CY Japan  
 DT Journal; Article  
 LA Japanese  
 STA New  
 AB One **polarizer** type reflective LCDs are promising to use in reflective color LCDs with high resolution and gray scale and moving image capability. However, in order to apply it to high-quality monitor displays, its contrast ratio is not sufficiently high in wide range of wavelength and viewing angle. In this paper, we discuss the design rule of liquid crystal **layer** and retardation films for the one **polarizer** type reflective LCDs to get high quality, especially high contrast ratio, for the monitor displays. (author abst.)  
 CC NC06030Q (621.385:621.397)  
 CT **liquid crystal display**; optical reflection; color display; visual field; contrast; image quality; optimum design; chromaticity; reflectivity; nematic phase; phase shift; plastic film; optical design  
 BT display device; equipment; electromagnetic **wave reflection**; reflection; image characteristic; characteristic; design; degree; ratio; liquid crystal; mesophase; phase(thermodynamics); variation

L75 ANSWER 75 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN  
 AN 2003(21):1869 COMPENDEX  
 TI Reflective-type TN-LCDs with single **polarizer**.  
 AU Fukuda, Ichiro (Kanazawa Institute of Technology, Nonoiti, Isikawa 921-8501, Japan); Matui, Naohisa; Kotani, Yukeo; Uchida, Tatuo  
 MT Liquid Crystals II.  
 MO SPIE  
 ML San Diego, CA, United States  
 MD 20 Jul 1998-21 Jul 1998  
 SO Proceedings of SPIE - The International Society for Optical Engineering v 3475 1998.p 24-34  
 CODEN: PSISDG ISSN: 0277-786X  
 PY 1998  
 MN 60955  
 DT Conference Article  
 TC Theoretical  
 LA English  
 AB In recent years, compact, portable information equipment such as notebook computers and PDAs has progressed remarkably. This, in turn, has created a need for **bright** reflective color **liquid crystal displays** (LCDs) without a backlight. In response to this requirement, we have previously proposed a new, achromatic reflective TN-LCD, and STN-LCD with one **polarizer** and one retardation film. The LCDs enables creation of a reflective color LCD using a color-mixing system such as the micro color filter type. However, the TN-LCD of the normally black mode has the problem that the higher the resolution is, the lower the luminance becomes due to the space between electrodes. In order to solve this problem, we will propose a normally white mode achromatic reflective TN-LCD, composed of the above mentioned

normally black mode reflective TN-LCD and one liquid-crystal polymer film with a twist angle of the same magnitude, but with an opposite-handed to the LC layer. The electro-optical properties of the LCD have been numerically analyzed, and it was found that several sets of solutions exist for obtaining an achromatic image with high luminance as well as a high contrast ratio. In this paper, we will focus on the achromatic reflective TN-LCD of normally white mode, which is promising for a new reflective LCD in respect to full color displays, especially for document displays. 21 Refs.

CC 722.2 Computer Peripheral Equipment; 741.3 Optical Devices and Systems; 741.1 Light. Optics; 817.1 Plastics Products; 815.1.1 Organic Polymers; 931.2 Physical Properties of Gases, Liquids and Solids

CT \*Liquid crystal displays; Color; Plastic films; Personal digital assistants; Liquid crystal polymers; Electrooptical effects; Light reflection

ST Retardation films

ET As\*D\*P; PDAs; P cp; cp; D cp; As cp; N\*T; TN; T cp; N cp

L75 ANSWER 76 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:585915 HCAPLUS

DN 133:157730

ED Entered STN: 24 Aug 2000

TI Fabrication of a liquid crystal display device

IN Hu, Joong-bum

PA Lg Electronics Co., Ltd., S. Korea

SO Repub. Korea, No pp. given

CODEN: KRXXFC

DT Patent

LA Korean

IC ICM G02F001-1337

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 9709045	B1	19970603	KR 1993-15053	19930803
PRAI	KR 1993-15053		19930803		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
KR 9709045	ICM	G02F001-1337

AB A LCD device film is fabricated having a thickness for maximum light transmittance, by virtue of analyzing the contrast, a reaction velocity and a consumption current dependent upon rubbing conditions and the thickness of the insulating and array layers. The upper and bottom glass substrates that deposit the transparent conductive layer arrange with the regular gap. The top and lower electrodes are formed in the upper and bottom glass substrates by photolithog. The insulating layer of which the main component is SiO<sub>2</sub>, is formed in the substrates having the top and lower electrodes by roll coating. And then the array layers of which the main component is PI, are formed in the insulating layer. The spacer is located in the upper and bottom array layers that are treated by the rubbing method.

ST liq crystal display

IT Films

(elec. conductive, transparent; liquid crystal display elements)

IT Transparent films

(elec. conductive; **liquid crystal display** elements)  
 IT Electric conductors  
 Electric conductors  
 (films, transparent; **liquid crystal display** elements)  
 IT Electrodes  
 Electronic device fabrication  
 Glass substrates  
**Liquid crystal displays**  
 (**liquid crystal display** elements)  
 IT 7631-86-9, Silica, processes  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (**liquid crystal display** elements)

L75 ANSWER 77 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1997:479084 HCAPLUS

DN 127:102874

ED Entered STN: 01 Aug 1997

TI Thin-film transistor array board for **liquid-crystal display** and fabrication thereof

IN Yamaguchi, Ayako; Tsutsu, Hiroshi

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L029-786

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 74

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09129882	A2	19970516	JP 1995-281799	19951030
PRAI	JP 1995-281799		19951030		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 09129882	ICM	H01L029-786

AB The invention relates to a thin-film transistor array board, suited for use in active-matrix **liquid-crystal display** panels, wherein the light-shielding layer consists of a pigment and/or carbon particle-containing organic resin film, which is microtextured to **minimize reflection** of extraneous light.

ST thin film transistor **liq crystal display**

IT Thin film transistors  
 (thin-film transistor for **liquid-crystal display**)

IT Photoresists  
 RL: DEV (Device component use); USES (Uses)  
 (thin-film transistor for **liquid-crystal display**)

IT 7440-21-3, Silicon, uses 7440-44-0, Carbon, uses  
 RL: DEV (Device component use); USES (Uses)  
 (thin-film transistor for **liquid-crystal display**)

L75 ANSWER 78 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN DUPLICATE 4

AN 1998(6):5873 COMPENDEX

TI Flat liquid crystal projectors with integrated cholesteric color filters/  
**polarizers** and photo-aligned optical retarders.

AU Schadt, Martin (ROLIC Ltd, Basel, Switz); Schmitt, Klaus

MT Proceedings of the 1997 17th Annual International Display Research  
 Conference.

MO IEEE

ML Toronto, Can

MD 15 Sep 1997-19 Sep 1997

SO SID Conference Record of the International Display Research Conference  
 1997.SID, Santa Ana, CA, USA.p 219-222  
 CODEN: 002723 ISSN: 1083-1312

PY 1997

MN 47324

DT Conference Article

TC General Review

LA English

AB Recent progress made in cholesteric projector configurations and  
 cholesteric **liquid crystal displays** (LCDs)  
 has considerably spurred interest in monomeric and polymeric cholesteric  
 materials. We have shown that compact and **bright** video LCD  
 projectors are feasible with stacks of cholesteric band modulation filters  
 (BMFs). The discrete cholesteric filters originally used were planar  
 aligned sandwich cells made of glass plates comprising temperature  
 compensated monomeric cholesteric mixtures with selective  
**reflection/transmission wavelengths**  $\lambda_0$  tuned to  
 the respective red, green and blue color coordinates. The discrete filters  
 and retarders were attached to each other by optical cement. Cholesteric  
 projection optics are reviewed. The first solid state, high  
**contrast** band modulation filter elements made of polymeric  
 cholesteric films with integrated photo-aligned nematic liquid crystal  
 polymer retarder **layers** are presented. The 8  $\mu$ m thin,  
 non-absorbing BMF **layers** are directly coatable onto LCD imager  
 substrates, thus rendering flat cholesteric projection engines with no  
 discrete optical elements feasible. (Author abstract) 14 Refs.

CC 741.3 Optical Devices and Systems; 804 Chemical Products Generally; 742.2  
 Photographic Equipment; 815.1.1 Organic Polymers; 801 Chemistry

CT **\*Liquid crystal displays**; Liquid crystal polymers; Optical  
 films; Projection systems; Substrates; Optical filters; Nematic liquid  
 crystals; Cholesteric liquid crystals

ST Photo aligned optical retarders; Cholesteric color filters

L75 ANSWER 79 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 970086754 JICST-EPlus

TI Method of Characterizing Rubbed Polyimide Film for **Liquid**  
**Crystal Display** Devices Using Reflection Ellipsometry.

AU HIROSAWA I

CS NEC Corp., Kanagawa, JPN

SO Jpn J Appl Phys Part 1, (1996) vol. 35, no. 11, pp. 5873-5875. Journal  
 Code: G0520B (Fig. 2, Ref. 16)  
 ISSN: 0021-4922

CY Japan

DT Journal; Article

LA English

STA New

AB Reflection ellipsometry is applied to characterize the molecular  
 orientation of rubbed polyimide films for **liquid crystal**  
**display** devices. Thickness, dielectric constants and tilt angle of  
 the principal dielectric axis of the molecularly oriented upper  
**layer** and thickness of the random **layer** in rubbed  
 polyimide films can be determined by analyzing the anisotropic

polarization of reflected light. (author abst.)

CC BK03010L (544.25)

CT **liquid crystal display**; polyimide; molecular orientation; ellipsometry; surface treatment; phase shift; liquid crystal; permittivity; tilt angle; polymer membrane; rubbing

BT display device; equipment; polymer; orientation(direction); **polarimetry**(measurement); optical measurement; measurement; treatment; variation; mesophase; phase(thermodynamics); ratio; angle; geometric quantity; functional polymer; macromolecule; membrane and film

L75 ANSWER 80 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 960864749 JICST-EPlus

TI Reflector Parameters for High Reflectance and High Contrast Ratio with White-Taylor Reflective Display.

AU YOSHIDA H; SASAKI T; NAKAMURA K; OHASHI M

CS Fujitsu Ltd., Atsugi, JPN

SO Jpn J Appl Phys Part 1, (1996) vol. 35, no. 8, pp. 4361-4368. Journal Code: G0520B (Fig. 14, Ref. 6)

ISSN: 0021-4922

CY Japan

DT Journal; Article

LA English

STA New

AB We have calculated the appropriate reflector parameters for high white-state reflectivity. First, we studied the reflector with and without a **refractive layer**. With a **refractive layer** on the reflector, the appropriate average reflector slope is smaller than that without, because the incident light **refracts** at the air interface and the incident angle to the reflector is small. Next, we investigated the appropriate reflector for a White-Taylor display. We found that the optimum shape of the reflector for reflective display depends on the type of light source, i.e., a diffused light source or a point light source. The optimum average slope of the reflector(K) for the White-Taylor display is between 7.DEG. and 10.DEG.. With this value of K, we can achieve both high reflectivity and a high contrast ratio with both a diffused light source and a point light source. (author abst.)

CC NC06030Q (621.385:621.397)

CT **liquid crystal display**; optical reflection; reflector(electromagnetic); optical **refraction**; reflectivity; contrast; angle of incidence; light source; cholesteric phase

BT display device; equipment; electromagnetic **wave reflection**; reflection; reflector; electromagnetic wave **refraction**; **refraction**; ratio; angle; geometric quantity; liquid crystal; mesophase; phase(thermodynamics)

L75 ANSWER 81 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 960286491 JICST-EPlus

TI **Polarizing Fabric Screen for Liquid Crystal Display System.**

AU UETSUKI M

CS Kuraray Co., Ltd., Kurashiki, JPN

SO Jpn J Appl Phys Part 1, (1996) vol. 35, no. 2A, pp. 772-779. Journal Code: G0520B (Fig. 17, Tbl. 1, Ref. 5)

ISSN: 0021-4922

CY Japan

DT Journal; Article

LA English

STA New

AB Using a **polarizing fiber** of poly(vinyl alcohol) and a

nonpolarizing fiber of 6-nylon as a weft and a warp, respectively, a **polarizing** fabric was woven in a satin fashion. After calendering the fabric and coating with a transparent resin, aluminum vapor was deposited on the rear surface to produce a reflective **layer**. The outer surface of the aluminum **layer** was pasted with a poly(vinyl chloride) sheet to complete the **polarizing** fabric screen, which filtered nonpolarized illuminant light to facilitate visualization of dim images from a liquid crystal projector. When the **polarizing** fiber array was oriented vertically, the light forming the image was diffused trapezoidally in a horizontal plane to increase the viewing angle and the light recurrence of the projected image giving a clear picture with no hotspot even in a relatively bright room. (author abst.)

CC ZA04020X; NC06030Q (778.2; 621.385:621.397)

CT **liquid crystal display**; nylon 6 fiber; polyvinyl alcohol fiber; woven fabric; **polarized** light; screen; evaporated film; metallic thin film; aluminum; optical reflection; projection display

BT display device; equipment; nylon fiber; polyamide fiber; synthetic fiber; man-made fiber; fiber; fabric; textile product; product; **polarized** wave; **polarization**; thin film; membrane and film; metal; metallic element; element; 3B group element; third row element; electromagnetic **wave reflection**; reflection

L75 ANSWER 82 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 970276557 JICST-EPlus

TI A Single-**Polarizer** Reflective TFT-LCD.

AU SAKAI E; NAKAMURA H; YOSHIDA K; UGAI Y

CS Hosiden Corp. Res. and Dev. Center, Hyogo, JPN

SO Proc 3rd Int Disp Workshops 1996 Vol 1, (1996) pp. 329-332. Journal Code: K19970091 (Fig. 8, Tbl. 3, Ref. 6)

CY Japan

DT Conference; Short Communication

LA English

STA New

AB An TFT reflective LCD was made, consisting of diffused plate, **polarizing** plate, retardation plate, glass substrates, color filter, TN liquid crystal **layer** and thin film transistor installed glass substrates. Transistors and other parts in thin film transistor installed glass substrates were filled with acryl. Pixel electrodes and reflective plates of the aluminium were produced on the smoothed surfaces. Black and white and full color reflective **liquid crystal displays** driven by amorphous transistor were made with the cell of such configuration. ( But the color filter was removed in the black and white display ). The result showed that in case of the black and white display, the **maximum reflectivity** was 700% compared with the standard white ( BaSO<sub>4</sub> ), and the best contrast ratio was 6:1. In color display, they were 280% and 6:1, respectively.

CC NC06030Q (621.385:621.397)

CT **liquid crystal display**; thin film transistor; **polarizer** (light); reflectivity; retarder; image quality; nematic phase

BT display device; equipment; transistor; semiconductor device; solid state device; optical element; optical system; ratio; transmission(speed); transmission gear; image characteristic; characteristic; liquid crystal; mesophase; phase(thermodynamics)

L75 ANSWER 83 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN

AN 970273218 JICST-EPlus

TI Advances In Reflective **Polarisers**.

AU COATES D; GOULDING M J; GREENFIELD S; HANMER J M W; MARDEN S A; PARRI O L; VERRALL M; WARD J

CS Merck Ltd., Dorset

- SO Proc 3rd Int Disp Workshops 1996 Vol 2, (1996) pp. 309-312. Journal Code: K19970092 (Fig. 15, Ref. 3)
- CY Japan
- DT Conference; Short Communication
- LA English
- STA New
- AB This paper examined the optical characteristics of reflective **polarizing** plate system fabricated by laminating wide wavelength region cholesteric film and Q-section plates. Non optic axis characteristics of these **layers** could be modeled, and it was proven experimentally that the characteristics of Q-section plates played an important role in the operation of the **reflective polarized light** system. By choosing the Q-section plate properly, reflective **polarizing** plate system with a wide range of lightness and small non-optic axes color change can be made.
- CC NC06030Q; BD07050K (621.385:621.397; 535.51.08:681.785.3)
- CT **liquid crystal display; polarizer**(light); optical property; phase plate; reflection; cholesteric phase; retarder
- BT display device; equipment; optical element; optical system; liquid crystal; mesophase; phase(thermodynamics); transmission(speed); transmission gear
- L75 ANSWER 84 OF 96 INSPEC (C) 2005 IEE on STN
- AN 1997:5715481 INSPEC DN A9722-0760F-003; B9711-7260-048
- TI A new method to measure thickness of twisted nematic liquid crystal cells.
- AU Shao, X.; Yu, T.; Wang, Z.; Yuan, J.; Guo, J.; Huang, X. (Changchun Inst. of Phys., Chinese Acad. of Sci., China)
- SO Proceedings of the Sixteenth International Display Research Conference. SID's 16th International Display Research Conference. EURO DISPLAY New York, NY, USA: Soc. Inf. Display (SID), 1996. p.309-12 of xvii+633 pp. 3 refs.
- Conference: Birmingham, UK, 1-3 Oct 1996
- DT Conference Article
- TC Theoretical; Experimental
- CY United States
- LA English
- AB A new method to measure the cell gap of filled twisted nematic liquid crystal cell was presented in this paper. Only the relative position of **polarizers' transmissive axis** corresponding to **maximal transmittance** are necessary during the measurement process using this method, so the effect of the substrates, ITO and alignment **layer** can be avoided. Theoretical analysis and experimental results showed that the error is within  $\pm 0.05 \mu\text{m}$  for cell gap from 3 to 12  $\mu\text{m}$  and the accuracy can be improved by selecting wavelength reasonably.
- CC A0760F Optical polarimetry and ellipsometry; A0630C Spatial variables measurement; A6130 Liquid crystals; B7260 Display technology and systems; B4150D Liquid crystal devices; B7320C Spatial variables measurement
- CT **LIQUID CRYSTAL DISPLAYS; NEMATIC LIQUID CRYSTALS; POLARIMETRY; THICKNESS MEASUREMENT**
- ST twisted nematic liquid crystal cells; LCD cells; thickness measurement method; cell gap measurement; relative position; **polarizer transmissive axis; maximal transmittance; wavelength selection; STN-LCD**
- L75 ANSWER 85 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN
- AN 1996(37):3072 COMPENDEX
- TI Lateral-electric-field diffraction mode LCD for projection display systems.
- AU Hatoh, Hitoshi (Toshiba Corp., Yokohama, Jpn); Hisatake, Yuzo; Sato,

Makiko; Ohyama, Tsuyoshi; Watanabe, Ryoichi

MT Projection Displays II.

MO SPIE - Int Soc for Opt Engineering, Bellingham, WA USA

ML San Jose, CA, USA

MD 29 Jan 1996-31 Jan 1996

SO Proceedings of SPIE - The International Society for Optical Engineering v 2650 1996. Society of Photo-Optical Instrumentation Engineers, Bellingham, WA, USA. p 234-242

CODEN: PSISDG ISSN: 0277-786X

ISBN: 0-8194-2024-7

PY 1996

MN 22514

DT Conference Article

TC Experimental

LA English

AB A new **liquid crystal display** (LCD) mode

based on diffraction effects, which result from the application of lateral electric fields on the liquid crystal (LC) **layer**, is proposed in order to realize **bright** and high-**contrast** images in

projection displays. The LC cell structure and its electro-optical characteristics are presented and its performance is compared to several other conventional **liquid crystal display**

modes. In the new LCD, the upper and lower substrates support striped transparent electrodes which have a width and a pitch of 7  $\mu\text{m}$  and 22  $\mu\text{m}$ , respectively, for a typical case. The upper and lower electrodes are

positioned parallel to each other and shifted by a half pitch, i.e. the upper electrodes are aligned with the spacings separating the lower electrodes. We refer to this design as the staggered inter-digital

electrode configuration. Both substrates are coated with a polyimide **layer** rubbed in the direction perpendicular to the striped

electrodes resulting in an anti-parallel LC alignment. In a typical cell, a nematic LC material with a positive dielectric anisotropy and a thickness of 5  $\mu\text{m}$  are used. Lateral electric fields are generated between the upper

and lower substrates and we therefore call this LC mode the Lateral Electric Field Diffraction (LEFD) mode. The transmission-voltage (T-V)

curves of the LEFD liquid crystal cell were measured by using a **polarized** and unpolarized He-Ne laser beam ( $\lambda$  equals 632.8

nm). The plane of incidence of the laser was set to be parallel or perpendicular to the longitudinal axis of the striped electrode and the **transmitted light** (zeroth order diffraction light) was

measured by a photometer. The T-V curves did not show any dependence on the **polarization** of the incident light and no hysteresis was observed.

The transmission was found to be about 80% when no voltage was applied. The threshold voltage was found to be about 1.8 volts and the voltage at which the **minimum transmission** occurred was 4.5 volts. The

**contrast** ratio was calculated to be about 200:1. In the LEFD LCD,

the effective indices of **refraction** in the directions both

perpendicular and parallel to the striped electrodes are modified by the lateral electric field. Diffraction effects occur for all

**polarizations** and it is therefore possible to obtain a high

**contrast** ratio for unpolarized light. This means that the LEFD LCD

does not require any **polarizer**. By combining this LEFD design

with a schlieren optical system, it would be possible to create

**bright** and high **contrast** images in projection

displays. We think that the use of LEFD LCD is one of the most promising solutions to realize a very high performance in projection display

systems. 8 Refs.

CC 722.2 Computer Peripheral Equipment; 742.2 Photographic Equipment; 741.3 Optical Devices and Systems; 701.1 Electricity: Basic Concepts and Phenomena; 714 Electronic Components and Tubes; 741 Light, Optics and

Optical Devices  
 CT \*Display devices; Liquid crystal displays; Electric fields; Electrooptical devices; Image processing; Diffraction gratings; Projection systems  
 ST Electric field diffraction mode  
 ET T\*V; T-V; He\*Ne; He-Ne

L75 ANSWER 86 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
 AN 960433085 JICST-EPlus  
 TI Full color Reflective LCD with Wide viewing angle, High resolution and Fast response(R-OCB mode).  
 AU ISHINABE TAKAHIRO; NAKAYAMA TAKANORI; SUZUKI MAKOTO; UCHIDA TATSUO  
 CS Tohoku Univ., Fac. of Eng.  
 SO Terebijon Gakkai Gijutsu Hokoku, (1996) vol. 20, no. 9(IDY96 53-76), pp. 125-130. Journal Code: S0209A (Fig. 14, Tbl. 1, Ref. 9)  
 ISSN: 0386-4227  
 CY Japan  
 DT Journal; Article  
 LA Japanese  
 STA New  
 AB Reflective liquid crystal displays(LCDs) attract many interests for its light weight and low power consumption. We propose a new type of reflective LCD mainly comprising a Hybrid-aligned nematic LC-layer, a biaxial-retardation film, a light scattering film and a mirror electrode. This new type of reflective LCD has advantage of high resolutions owing to the mirror electrode and wide viewing angle by designing with the same concept of the OCB mode. In this paper we describe the optimum condition of light scattering film for this new reflective LCD. (author abst.)  
 CC NC06030Q (621.385:621.397)  
 CT liquid crystal display; color display; optical reflection; energy saving; consumed electric power; reflecting mirror; birefringence; forward scattering; resolving power; optical system; polarizer (light); visual field  
 BT display device; equipment; electromagnetic wave reflection; reflection; saving; electric power; mirror; optical property; scattering; performance; optical element

L75 ANSWER 87 OF 96 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1995:513703 HCAPLUS  
 DN 122:252289  
 ED Entered STN: 28 Apr 1995  
 TI Liquid-crystal display device  
 IN Toko, Yasuo; Sugyama, Takashi  
 PA Stanley Electric Co Ltd, Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G02F001-137  
 ICS G02F001-1337  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07020503	A2	19950124	JP 1993-159605	19930629
JP 1993-159605		19930629		

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

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JP 07020503 ICM G02F001-137  
ICS G02F001-1337

AB A **liquid-crystal display** device which provides high-quality images and does not require rubbing treatment comprises a chiral nematic liquid crystal **layer** sandwiched between a pair of transparent substrates in which a pair of polarizing plates having a designated polarizing axis direction are sandwiched between the substrates and the distance between the substrates and the **refraction index anisotropy** of the liquid crystal **layer** are so selected that the **maximum transmittance** of the display device is in 520-550 nm range.

ST **liq crystal display** device construction  
IT Optical imaging devices  
(electrooptical liquid-crystal, with improved transmittance)

L75 ANSWER 88 OF 96 INSPEC (C) 2005 IEE on STN  
AN 1998:5911599 INSPEC DN B9806-7260-091  
TI Reflective cholesteric **polariser** improving the light yield of back- and side-lighted flat **panel liquid crystal displays**.

AU Broer, D.J.; Van Haaren, J.A.M.M.; Mol, G.N. (Philips Res. Lab., Eindhoven, Netherlands); Leenhouts, F.  
SO Proceedings of Fifteenth International Display Research Conference. Asia Display '95  
Tokyo, Japan & Santa Ana, CA, USA: Inst. Telev. Eng. Japan & SID, 1995. p.735-8 of xxvi+981 pp. 5 refs.  
Conference: Hamamatsu, Japan, 16-18 Oct 1995  
Sponsor(s): Inst. Telev. Eng. Japan; SID  
DT Conference Article  
TC Experimental  
CY United States  
LA English

AB A new **polariser** principle is demonstrated which is based on a single-**layer** cholesteric liquid crystalline network and an adhered quarter wave retardation foil. The width of the cholesteric reflection band expands over the total visible wavelength range. In a flat **panel liquid crystal display** set up such a **polariser** can be used as pre-**polariser**, improving on the yield of **polarised** light with 40% without any further optimisation of the back-light system. The basis for the light yield improvement is the non-absorbent production of **polarised** light by **reflection** and the subsequent recycling of the **reflected wrongly polarised light** into light with the appropriate **polarisation**.

CC B7260 Display technology and systems; B4150D Liquid crystal devices  
CT CHOLESTERIC LIQUID CRYSTALS; FLAT PANEL DISPLAYS; LIQUID CRYSTAL DISPLAYS; OPTICAL POLARISERS

ST **reflective cholesteric polariser**; light yield; back-lighted device; **flat panel liquid crystal display**; side-lighted device; quarter wave retardation foil

L75 ANSWER 89 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 950241639 JICST-EPlus  
TI Progress of material for **liquid crystal display**. 2. Technical trends of **polarized** light and phase difference film : Development of **polarized** light/phase difference film targeting improvement of angle of visibility and contrast.

AU YOSHIMI HIROYUKI  
CS Nitto Denko Corp.

- SO Gekkan Shinsozai (New Materials - Technology & Applications -), (1995)  
vol. 6, no. 2, pp. 19-23. Journal Code: L1184A (Fig. 9)  
CODEN: SSOZEX; ISSN: 0917-0499
- CY Japan  
DT Journal; Commentary  
LA Japanese  
STA New
- AB The film above having excellent visual performances and contrast is introduced. This paper describes features of antiglare processing which reduces the **reflection** loss of the light by reducing **refractive index** on the surface of **polarized** light film and by employing thin **layer** optical design. In addition, the paper introduces chromatic dispersion of transparent plastic material using a polymer for phase difference film for STN, effect of chromatic dispersion of the polymer, and phase difference formation technique by combination.
- CC NC06030Q (621.385:621.397)
- CT nematic phase; **liquid crystal display**; visual field; contrast; **polarizer**(light); phase control; polymer membrane; optical transmission; antireflection film; optical reflection; optical dispersion; optical **refraction**
- BT liquid crystal; mesophase; phase(thermodynamics); display device; equipment; optical element; optical system; electric quantity control; control; functional polymer; macromolecule; membrane and film; electromagnetic wave transmission; transmission(propagation); electromagnetic **wave reflection**; reflection; dispersion; electromagnetic wave **refraction**; **refraction**
- L75 ANSWER 90 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN
- AN 930279713 JICST-EPlus
- TI Development of polymer-dispersed liquid crystal and its application to spatial light modulators.
- AU TAKIZAWA KUNIHARU; KIKUCHI HIROSHI; FUJIKAKE HIDEO; FUJII TAKANORI
- CS NHK, Science and Technical Res. Labs.
- SO NHK Giken R&D, (1993) no. 23, pp. 37-52. Journal Code: F0219B (Fig. 16, Tbl. 4, Ref. 18)  
ISSN: 0914-7535
- CY Japan  
DT Journal; Article  
LA Japanese  
STA New
- AB This paper describes polymer-dispersed liquid crystal(PDLC) consisting of microdroplets of nematic liquid crystal randomly dispersed in polymer matrix, and new polymer-dispersed liquid crystal light valves(PDLCLVs) using the PDLC film and a Bi12SiO20(BSO) photoconductive crystal. The PDLC film has several advantages, such as no requirement of a **polarizer**, analyzer and liquid crystal alignment **layer**, high transmittance, high-speed response, self-sustenance, and ease of fabrication. The PDLCLV which consists of a 10-Mm PDLC film, HfO2/SiO2 multilayer mirror, and 250Mm BSO thin plate, exhibits the **maximum transmittance** of 86%, extinction ratio of 105:1, and a limiting resolution of 34 lp/mm. The moving image display characteristics of a monochrome projection system consisting of the PDLCLV and an active-matrix liquid crystal panel shows that the PDLCLV is just suitable to the optical addressing projection display. (author abst.)
- CC BK03020W; NC06030Q (544.252.22; 621.385:621.397)
- CT nematic phase; spatial light modulator; polymer; optical scattering; still-picture; moving image; **liquid crystal display**; projection display
- BT liquid crystal; mesophase; phase(thermodynamics); optical modulator; optical element; optical system; modulator; modulator-demodulator;

electromagnetic wave scattering; scattering; image; display device; equipment

- L75 ANSWER 91 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 940491935 JICST-EPlus  
TI Performance improvement of TFT-LCD and polymer materials.  
AU TANAKA YASUHARU; MORIIZUMI YASUE; KURAUCHI SHOICHI; OKAMOTO MASUMI; HIRATA JUNKO; HATO HITOSHI  
CS Toshiba Disupureidebaisugiken  
SO Porima Zairyo Foramu Koen Yoshishu, (1993) vol. 2nd, pp. 22-25. Journal Code: L2062A (Fig. 7, Ref. 9)  
CY Japan  
DT Conference; Short Communication  
LA Japanese  
STA New  
AB The display quality of a thin film transistor-driven LCD (TFT-LCD) has been improved, but its visibility angle and surface reflection must be improved. As the visibility angle improvement method, the insertion of optically anisotropic **layer** (POC, NOC, UST) and a picture element orientation division method (mask rubbing method and overall rubbing method) are explained. The surface reflection of LCD can be decreased by decreasing the surface reflection of a **polarizing** plate and BM part.  
CC NC06030Q; CG02001Z (621.385:621.397; 544.23.03/.04)  
CT optical deflector; FET; **liquid crystal display**; liquid crystal polymer; visual field; angular dependence; pixel; optical reflection; anisotropy; color reproduction  
BT optical element; optical system; deflector; transistor; semiconductor device; solid state device; display device; equipment; liquid crystal; mesophase; phase(thermodynamics); functional polymer; macromolecule; dependence; image; electromagnetic **wave reflection**; reflection; property; regeneration
- L75 ANSWER 92 OF 96 JICST-EPlus COPYRIGHT 2005 JST on STN  
AN 900897887 JICST-EPlus  
TI Direct-addressed matrix **liquid crystal displays**.  
AU OKABE M; YOSHIDA H; OHASHI M; KANEKO Y; YAMAGUCHI H  
CS Fujitsu L T D  
SO Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku (IEIC Technical Report (Institute of Electronics, Information and Communication Engineers)), (1990) vol. 90, no. 288(EID90 64-73), pp. 35-40. Journal Code: S0532B (Fig. 9, Tbl. 1, Ref. 8)  
CY Japan  
DT Journal; Article  
LA English  
STA New  
AB The multiplexibility of scan lines has been improved by the development of supertwisted nematic **liquid crystal displays** (STN-LCDs) which make use of birefringence effects. As compared to conventional TN devices, a large elastic energy is stored in the liquid crystal (LC) **layers** because the twist angle is almost three times larger. This energy helps switch the direction of LC molecules from a twisted state to a vertical state with a small change in voltage applied to the LC cells. Two display modes were developed for display applications: the yellow mode and the blue mode. Yellowish-green or blue tinting is inevitable in these modes. **Light transmitted** through the LC **layer** is dispersed because the **refractive** indexes depend on the light wavelength. A double **layered** STN (DSTN) black and white display combining another LC panel of almost mirror

symmetry with the STN-LCD has been developed. The additional panel compensates for light dispersion. Compensation is also done with a retardation film which exhibits optical anisotropy. Recently multicolor displays have been developed. RGB micro-colorfilters are placed over each pixel of a DSTN-LCD. The number of colors is increased with the aid of gray-scale display technology. In this paper, we describe a 16-color DSTN-LCD which incorporates elements of almost all STN technology developed up to now. (author abst.)

CC NC06030Q (621.385:621.397)

CT **liquid crystal display**; matrix(mathematics); color display; nematic phase; birefringence; multistory structure; luminance; contrast; image quality

BT display device; equipment; algebraic system; liquid crystal; mesophase; phase(thermodynamics); optical property; structure; photometric quantity; image characteristic; characteristic

L75 ANSWER 93 OF 96 COMPENDEX COPYRIGHT 2005 EEI on STN

AN 1990(2):20308 COMPENDEX DN 900215830

TI Multicolor projection **display** using nematic-cholesteric **liquid crystal**.

AU Yamagishi, Yasuo (Fujitsu Lab Ltd, Atsugi, Jpn); Iwasaki, Masayuki; Yoshihara, Toshiaki; Mochizuki, Akihiro; Haraguchi, Munehiro

SO IEEE Trans Electron Devices v 36 n 9 pt 1 Sep 1989 p 1888-1891

CODEN: IETDAI ISSN: 0018-9383

PY 1989

DT Journal

TC Experimental

LA English

AB A multicolor projection display with a **bright** screen and high information content using nematic-cholesteric (NC) liquid crystals is discussed. Through investigation of light scattering in the focal-conic state of the NC liquid-crystal **layer**, it was found that the **transmittance** depends on the **light** wavelength due to diffraction scattering and that the color of **light** **transmitted** through the **layer** can be controlled by the birefringence and the thickness of the liquid-crystal **layer**. A 640 multiplied by 400 pixel multicolor projection **display** was fabricated using a two-layered **liquid-crystal** **panel**, each **layer** passing green and red light under the focal-conic state. The Munsell chroma value was 6 for both the projected colors. The projector provides excellent white and black because of the high transmittance of the nematic state and the subtractive mixture of complementary colors. 5 Refs.

CC 741 Optics &amp; Optical Devices; 931 Applied Physics

CT **\*DISPLAY DEVICES: Liquid Crystal**; CRYSTALS, LIQUID: Nematic; LIGHT: Birefringence; HYSTERESIS

ST MULTICOLOR PROJECTION DISPLAY; NEMATIC-CHOLESTERIC LIQUID CRYSTAL; REFRACTIVE INDEX MEASUREMENT

L75 ANSWER 94 OF 96 INSPEC (C) 2005 IEE on STN

AN 1988:3054535 INSPEC DN B88009717

TI LCD television displays, the basic principles.

SO Image Technology (Oct. 1987) vol.69, no.10, p.442-3. 0 refs.

CODEN: IMATEV ISSN: 0305-6996

DT Journal

TC Practical

CY United Kingdom

LA English

AB Describes the basic LCD construction which is used in normal applications. For LCD colour television, however, there are several differences. First,

the system is not reflective. In other words, it does not depend on light that is reflected by mirror surface. Instead, it requires a white backlight that projects light through the system and out of the display. By varying the intensity of the electric field, the brightness of the light that passes through the upper polarizing layer can be varied accordingly, as the liquid crystals become twisted to a greater or lesser degree. This leads to tones on the television display. The second major difference is the use of large area integrated circuits inside the liquid crystal display. These have made possible a new type of display with an integrated Thin Film Transistor (TFT) for each pixel, or picture element. These transistors are arrayed in a matrix pattern on the lower glass plate.

CC B4150D Liquid crystal devices; B6420D Radio and television receivers;  
B7260 Display technology and systems

CT COLOUR TELEVISION RECEIVERS; FLAT PANEL DISPLAYS; LIQUID  
CRYSTAL DISPLAYS

ST LCD television displays; LCD colour television; white backlight;  
brightness; polarizing layer; large area integrated  
circuits; liquid crystal display; integrated Thin Film  
Transistor; picture element; glass plate

L75 ANSWER 95 OF 96 INSPEC (C) 2005 IEE on STN

AN 1982:1914616 INSPEC DN A82086546; B82046900

TI Optical properties of a new bistable twisted nematic liquid  
crystal boundary layer display.

AU Thurston, R.N.; Cheng, J.; Boyd, G.D. (Bell Telephone Labs., Holmdel, NJ,  
USA)

SO Journal of Applied Physics (June 1982) vol.53, no.6, p.4463-79. 16 refs.  
CODEN: JAPIAU ISSN: 0021-8979

DT Journal

TC New Development; Experimental

CY United States

LA English

AB In a new display cell, a holding voltage compresses the regions where the director is not essentially vertical into thin boundary layers adjacent to the surfaces. With opposite surfaces tilt-biased in opposite senses, and with suitable isolation regions, the director field contains a horizontal director line. Above a certain threshold voltage the stable states are asymmetric, with the horizontal director line nearer one surface than the other. In a twist cell, these bistable states can be discriminated optically with either a dichroic dye and a single polarizer or with two polarizers using birefringence effects. A dye gives poor results because the horizontal absorbing layers are thin. However, the birefringence effects enable good contrast to be obtained. The authors examine the brightness and contrast by studying the transmission of monochromatic light passing normally through the cell in the two states. They include an analysis of polarized light propagating through two birefringent layers of arbitrary phase difference, and whose principal planes are at arbitrary angles to each other and to the polarizers. A separate analysis relates the phase difference of the layers to the voltage and cell boundary conditions. In order to determine suitable operating conditions with two polarizers, the authors carry out several different calculations. These include: (1) calculating, with one state totally extinguished, the transmission of the other state when the cell twist is 45 degrees and when the cell twist is adjusted to maximize that transmission; (2) calculating the transmission and contrast ratio under conditions that maximize the transmission difference of the two

states; and (3) calculating the **contrast** ratio when the **polarizer** and cell twist are set to make the **brighter** state give circular **polarization** (in order to minimize chromatic effects). A qualitative experimental confirmation is included.

CC A6130G Orientational order of liquid crystals in electric and magnetic fields; A7820 Optical properties of bulk materials; B4150D Liquid crystal devices; B7260 Display technology and systems

CT BIREFRINGENCE; BOUNDARY **LAYERS**; LIGHT TRANSMISSION; **LIQUID CRYSTAL DISPLAYS**; NEMATIC LIQUID CRYSTALS

ST tilt bias; asymmetric stable states; light transmission; **bistable twisted nematic liquid crystal boundary layer display**; holding voltage; isolation regions; horizontal director line; threshold voltage; dichroic dye; **polarizers**; birefringence effects; **contrast**; **brightness**; arbitrary phase difference; **circular polarization**; chromatic effects

ET In

L75 ANSWER 96 OF 96 INSPEC (C) 2005 IEE on STN

AN 1982:1802910 INSPEC DN B82010087

TI Phase retarder LCDs.

AU Penz, P.A.

SO Molecular Crystals and Liquid Crystals (1981) vol.74, no.1-4, p.1763-9. 8 refs.  
CODEN: MCLCA5 ISSN: 0026-8941  
Conference: Proceedings of the Eighth International Liquid Crystal Conference. Kyoto, Japan, 30 June-4 July 1980

DT Conference Article; Journal

TC Application; Practical

CY United Kingdom

LA English

AB **Interference** colors produced by birefringent plastic **layers** can be used in conjunction with the twisted nematic **liquid crystal displays** to produce attractive blue vs. gold LCDs when viewed in reflection. **Brightness** of the retarder LCD is maximized by using low tilt angle alignment, thin glass on the rear of the display and a full reflector.

CC B4150D Liquid crystal devices

CT BIREFRINGENCE; LIGHT **INTERFERENCE**; **LIGHT REFLECTION**; **LIQUID CRYSTAL DISPLAYS**; NEMATIC LIQUID CRYSTALS

ST blue-gold phase retarder LCD; **interference colours**; **brightness**; birefringent plastic **layers**; **twisted nematic liquid crystal displays**; reflection; low tilt angle alignment; thin glass; full reflector

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